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ANNUAL REPORT

OF THE

State Board of Health

OF MARYLAND

FOR THE

YEAR ENDING DECEMBER 31, 1916



GEORGE T. MELVIN

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State Department of Health of Maryland 1916.

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REPORT OF THE BUREAU OF VITAL STATISTICS.

FREDERIC V. BEITLER, *Chief*

POPULATION, BIRTHS AND DEATHS.

The efforts of Boards of Health and Sanitarians are directed toward increasing the birth rate, diminishing the death rate and increasing the duration of life. As a basis upon which to direct their efforts in the State of Maryland, the tables contained within this report have been devised. All the earlier tables will be maintained and others added from time to time.

All Vital Statisticians use the Census figures of the population. The figures for Census years, of course, are most valuable. In inter-census years, the population is computed by the arithmetic method.

The returned mortality in Maryland probably now constitutes 100% of the total deaths. Birth registration constitutes about 98% of the total births. Maryland statistics show in this respect the deficiency existing in the majority of the American States in the registration of births.

The deaths registered in Maryland during 1916 were, for Rural Maryland, 12,472; in Baltimore City, 10,038; making a total for the State of 22,510.

The births reported for in 1916 were, for Rural Maryland 19,115; for Baltimore City, 14,560; making a total for the State of 33,675, giving an apparent increase in the population of the State of 11,165.

The figures for Maryland during 1915 were: Births, 32,367; deaths, 21,350, an increase of 11,017 births over deaths. The 1916 figures show an increase of 1,308 births over those registered during 1915.

POPULATION OF MARYLAND—1916.

The figures for the population for the inter-census years are estimated by the arithmetic method as advised by the American Public Health Association, and are corrected as of July 1st of each year. The yearly increment is given along with the figures for each division of the population so that persons wishing the use of figures for this State for any inter-census year may do so without having to estimate them.

The population of Maryland is given in Table I for the male, female, white and colored population of Baltimore City, Rural Maryland and the State of Maryland.

The estimated population, white and colored for the counties appears in Table I-A. The estimated population by ages, without distinction of sex or color, appears in Table XIX-A.

TABLE I.

ESTIMATED POPULATION IN MARYLAND FOR THE YEAR 1916

Maryland.		Population	Yearly Increment	
Total Population	.....	1,362,806	+10,866.0
White	.....	1,131,930	+11,161.0
Colored	.....	230,876	—295.0
Male	.....	678,772	+5,564.5
Female	.....	684,034	+5,301.5
Baltimore City.				
Total Population	.....	589,623	+5,015.5
White	.....	501,156	+4,472.8
Colored	.....	88,467	+542.7
Rural Maryland.				
Total Population	.....	773,183	+5,850.5
White	.....	630,774	+6,688.2
Colored	.....	142,409	—837.7
	<i>White Population</i>	<i>Yearly Increment</i>	<i>Colored Population</i>	<i>Yearly Increment</i>
Maryland.				
Males 564,249	+5,666.1	114,523	—101.6
Females 567,681	+5,494.9	116,353	—193.4
Baltimore City.				
Males 242,062	+2,133.6	41,797	+389.5
Females 259,094	+2,339.2	46,670	+153.2
Rural Maryland.				
Males 322,187	+3,532.5	72,726	—491.1
Females 308,587	+3,155.7	69,683	—346.6

TABLE I-A.

ESTIMATED POPULATION FOR THE YEAR 1916.

	<i>White</i>		<i>Colored</i>		<i>Total</i>	
	<i>Popula- tion</i>	<i>Incre- ment</i>	<i>Popula- tion</i>	<i>Incre- ment</i>	<i>Popula- tion</i>	<i>Incre- ment</i>
Allegany	66,472	+898.6	1,419	—15.9	67,891	+882.7
Anne Arundel	26,125	+117.5	13,386	—124.2	39,511	—6.7
Baltimore	128,977	+3,099.7	13,235	+99.6	142,212	+3,199.3
Calvert	5,404	+20.1	4,985	—9.8	10,389	+10.3
Caroline	15,947	+244.9	5,135	+55.7	21,082	+300.6
Carroll	32,049	+20.7	1,931	—13.2	33,980	+7.5
Cecil	20,158	—43.0	3,033	—48.4	23,191	—91.4
Charles	7,687	—20.3	7,897	—108.9	15,584	—129.2
Dorchester	19,732	+78.1	9,382	—6.5	29,114	+71.6
Frederick	48,131	+138.4	5,015	—62.2	53,146	+76.2
Garrett	21,521	+245.4	95	—1.9	21,616	+243.5
Harford	23,124	+44.4	4,649	—75.1	27,773	—30.7
Howard	12,346	+2.3	3,377	—64.0	15,723	—61.7
Kent	10,451	—55.5	5,357	—129.7	15,808	—185.2
Montgomery	24,388	+248.4	8,731	—82.5	33,119	+165.9
Prince George's...	28,876	+681.8	11,200	—49.0	40,076	+632.8
Queen Anne's	10,414	—98.0	5,466	—56.4	15,880	—154.4
Somerset	17,350	+59.8	9,440	—6.0	26,790	+53.8
St. Mary's	10,229	+81.0	6,705	—96.4	16,934	—15.4
Talbot	12,820	—3.4	6,346	—69.7	19,166	—73.1
Washington	50,549	+491.6	1,887	—37.6	52,436	+454.0
Wicomico	22,693	+352.5	6,614	+48.8	29,307	+401.3
Worcester	15,331	+83.2	7,124	+15.6	22,455	+98.8
Total Counties ...	630,774	+6,688.2	142,409	—837.7	773,183	+5,850.5
Baltimore City ...	501,156	+4,472.8	88,467	+542.7	589,623	+5,015.5
Total Maryland ..	1,131,930	+11,161.0	230,876	—295.0	1,362,806	+10,866.0

BIRTHS IN MARYLAND.

The number of births recorded in the State of Maryland during 1916 was 33,675, of which 19,115 were reported from Rural Maryland, and 14,560 from Baltimore City.

The number of white births reported was 27,335. The number of colored births reported was 6,340.

The total number of male births, 17,247; of female births, 16,428.

Table II gives the birth rates per thousand of population for Baltimore City, Rural Maryland and the State of Maryland for the years 1905 to 1916, inclusive. The birth rate for Baltimore City was 24.69 for the year 1916, for Rural Maryland 24.72, and for the entire State 24.71. The increase in the year 1912 for both Rural Maryland and Baltimore City was due to the new registration law which went into effect on July 1st of that year.

TABLE II.

BIRTH RATES, MARYLAND, 1906-1916.

<i>Year</i>	<i>Birth Rates Rural Maryland</i>	<i>Birth Rates Baltimore City</i>	<i>Birth Rates Maryland</i>
1906	13.72	16.87	15.08
1907	12.97	16.09	14.31
1908	14.07	16.70	15.20
1909	14.80	15.86	15.26
1910	14.51	17.62	15.85
1911	14.20	16.44	15.17
1912	17.64	20.01	18.67
1913	20.96	21.83	21.34
1914	23.66	21.80	22.86
1915	24.32	23.45	23.94
1916	24.72	24.69	24.71

In Table III and III-A, the births, deaths and increase are given by counties for the whole population, and separately for white and colored races; also the birth rate, death rate and rate of increase per 1,000 of the population (as estimated from the United States Census figures for 1910).

TABLE III.
BIRTH RATES, DEATH RATES AND RATE OF INCREASE, 1916.
White *Colored*

	<i>White</i>			<i>Colored</i>			<i>Total</i>		
	<i>Births</i> per 1,000	<i>Deaths</i> per 1,000	<i>Inc. or</i> <i>Dec. per</i> 1,000	<i>Births</i> per 1,000	<i>Deaths</i> per 1,000	<i>Inc. or</i> <i>Dec. per</i> 1,000	<i>Births</i> per 1,000	<i>Deaths</i> per 1,000	<i>Inc. or</i> <i>Dec. per</i> 1,000
<i>Counties</i>									
Allegany	26.31	13.90	+12.41	26.78	29.60	-2.82	26.32	14.23	+12.09
Anne Arundel	28.52	14.55	+13.97	28.91	30.93	-2.02	28.65	20.10	+8.55
Baltimore	22.25	17.98	+4.27	19.42	36.65	-17.23	21.99	19.72	+2.27
Calvert	27.39	12.21	+15.18	31.70	17.45	+14.25	29.45	14.73	+14.72
Caroline	19.38	11.29	+8.09	27.46	19.67	+7.79	21.35	13.33	+8.02
Carroll	20.28	15.10	+5.18	25.89	21.23	+4.66	20.60	15.45	+5.15
Cecil	22.17	13.54	+8.63	15.83	24.07	-8.24	21.34	14.92	+6.42
Charles	31.22	12.62	+18.60	40.27	25.33	+14.94	35.81	19.06	+16.75
Dorchester	27.97	15.00	+12.97	31.12	25.37	+5.75	28.99	18.34	+10.65
Frederick	24.81	14.50	+10.31	27.32	22.93	+4.39	25.04	15.30	+9.74
Garrett	25.74	11.52	+14.22	00.00	31.58	-31.58	25.63	11.61	+14.02
Harford	18.12	12.80	+5.32	25.38	21.94	+3.44	19.34	14.33	+5.01
Howard	22.03	11.34	+10.69	28.13	25.47	+2.66	23.34	14.37	+8.97
Kent	21.43	13.20	+8.23	32.11	26.51	+5.60	25.05	17.61	+7.44
Montgomery	21.03	11.48	+9.55	28.86	16.49	+12.37	23.10	12.80	+10.30
Prince George's	21.75	10.80	+10.95	31.34	21.52	+9.82	24.43	13.80	+10.63
Queen Anne's	27.27	14.21	+13.06	27.44	22.32	+5.12	27.33	17.00	+10.33
Somerset	24.50	11.53	+12.97	28.28	20.34	+7.94	25.83	14.63	+11.20
St. Mary's	26.40	13.20	+13.20	32.51	20.58	+11.93	28.82	16.12	+12.70
Talbot	20.98	15.13	+5.85	26.16	24.42	+1.74	22.70	18.21	+4.49
Washington	29.22	14.24	+14.98	16.96	31.27	-14.31	28.78	14.86	+13.92
Wicomico	21.46	12.96	+8.50	32.81	22.83	+9.98	24.02	15.18	+8.84
Worcester	20.55	12.07	+8.48	29.48	18.81	+10.67	23.38	14.21	+9.17
Total Counties	23.84	14.28	+9.56	28.61	24.33	+4.28	24.72	16.13	+8.59
Baltimore City	24.53	15.10	+9.43	25.61	27.92	-2.31	24.69	17.02	+7.67
Total Maryland	24.14	14.64	+9.50	27.46	25.71	+1.75	24.71	16.52	+8.19

TABLE III-A.
BIRTHS, DEATHS AND INCREASE OF POPULATION, 1916.

<i>Counties</i>	<i>White</i>			<i>Colored</i>			<i>Total</i>		
	<i>Births</i>	<i>Deaths</i>	<i>Inc. or Dec.</i>	<i>Births</i>	<i>Deaths</i>	<i>Inc. or Dec.</i>	<i>Births</i>	<i>Deaths</i>	<i>Inc. or Dec.</i>
Allegany	1,749	924	+825	38	42	-4	1,787	966	+821
Anne Arundel	745	380	+365	387	414	-27	1,132	794	+338
Baltimore	2,870	2,319	+551	257	485	-228	3,127	2,804	+323
Calvert	148	66	+82	158	87	+71	306	153	+153
Caroline	309	180	+129	141	101	+40	450	281	+169
Carroll	650	484	+166	50	41	+9	700	525	+175
Cecil	447	273	+174	48	73	-25	495	346	+149
Charles	240	97	+143	318	200	+118	558	297	+261
Dorchester	552	296	+256	292	238	+54	844	534	+310
Frederick	1,194	698	+496	137	115	+22	1,331	813	+518
Garrett	554	248	+306	...	3	-3	554	251	+303
Harford	419	296	+123	118	102	+16	537	398	+139
Howard	272	140	+132	95	86	+9	367	226	+141
Kent	224	138	+86	172	142	+30	396	280	+116
Montgomery	513	280	+233	252	144	+108	765	424	+341
Prince George's	628	312	+316	351	241	+110	979	553	+426
Queen Anne's	284	148	+136	150	122	+28	434	270	+164
Somerset	425	200	+225	267	192	+75	692	392	+300
St. Mary's	270	135	+135	218	138	+80	488	273	+215
Talbot	269	194	+75	166	155	+11	435	349	+86
Washington	1,477	720	+757	32	59	-27	1,509	779	+730
Wicomico	487	294	+193	217	151	+66	704	445	+259
Worcester	315	185	+130	210	134	+76	525	319	+206
Total Counties	15,041	9,007	+6,034	4,074	3,465	+609	19,115	12,472	+6,643
Baltimore City	12,294	7,568	+4,726	2,266	2,470	-204	14,560	10,038	+4,522
Total Maryland	27,335	16,575	+10,760	6,340	5,935	+405	33,675	22,510	+11,165

By reference to the part of the table dealing with birth rates, death rates and rates of increase per thousand, on page —, a comparison may be made of the efficiency of registration in the various counties of Maryland. The birth rate per thousand for Maryland probably lies between the figures 25 and 28. It can be assumed, therefore, that returns from any of the counties of Maryland, which are below 29 per thousand, indicate defective returns, and a birth rate of 15 or less means very defective returns.

The death rate exceeds 15 per thousand in eleven counties. The lowest death rate is in Garrett County, 11.61 per thousand. This county has almost entirely a white population and its returns to this office are good. The death rate here given we believe is correct.

Table IV gives a summary of the births, birth rates, deaths, death rates, and excess of births over deaths per thousand among male, female, white and colored for the total population of Rural Maryland and of Baltimore City. The birth rates and death rates per thousand are calculated both in relation to the total population and to the four divisions of population, male, female, white and colored.

TABLE IV.

BIRTHS, DEATHS AND RATES — MARYLAND — 1916.

SUMMARY.

<i>Births</i>	<i>Male</i>	<i>Female</i>	<i>White</i>	<i>Colored</i>	<i>Total</i>
Rural Maryland	9,775	9,340	15,041	4,074	19,115
Baltimore City	7,472	7,088	12,294	2,266	14,560
Maryland	17,247	16,428	27,335	6,340	33,675
<i>Deaths.</i>					
Rural Maryland	6,651	5,281	9,007	3,465	12,472
Baltimore City	5,186	4,852	7,568	2,470	10,038
Maryland	11,837	10,673	16,575	5,935	22,510
<i>Birth Rate (Computed on Total Populations).</i>					
Rural Maryland	12.64	12.08	19.45	5.27	24.72
Baltimore City	12.67	12.02	20.85	3.84	24.69
Maryland	12.66	12.05	20.06	4.65	24.71
<i>Death Rate (Computed on Total Populations).</i>					
Rural Maryland	8.60	7.53	11.65	4.48	16.13
Baltimore City	8.79	8.23	12.83	4.19	17.02
Maryland	8.69	7.83	12.16	4.36	16.52
<i>Difference Between Birth and Death Rates.</i>					
Rural Maryland	+4.04	+4.55	+7.80	+7.79	+8.59
Baltimore City	+3.88	+3.79	+8.02	— .35	+7.67
Maryland	+3.97	+4.22	+7.90	+ .29	+8.19

*Birth Rate (Computed
on Specific Groups of
Population).*

	<i>Male</i>	<i>Female</i>	<i>White</i>	<i>Colored</i>	<i>Total</i>
Rural Maryland	24.75	24.69	23.84	28.61	24.72
Baltimore City	26.32	23.18	24.53	25.61	24.69
Maryland	25.41	24.01	24.14	27.46	24.71

*Death Rate (Computed
on Specific Groups of
Population).*

Rural Maryland	16.84	15.39	14.28	24.33	16.13
Baltimore City	18.27	15.87	15.10	27.92	17.02
Maryland	17.44	15.60	14.64	25.71	16.52

*Difference Between
Birth and Death Rates.*

Rural Maryland	+7.91	+9.30	+9.56	+4.28	+8.59
Baltimore City	+8.05	+7.31	+9.43	-2.31	+7.67
Maryland	+7.97	+8.41	+9.50	+1.75	+8.19

Population).

The succeeding tables (Tables V and VI) give births and stillbirths for Rural Maryland and Baltimore City.

For the State, there were registered in 1916, 33,675 living births, and 3,085 stillbirths, a proportion of 9.16 per cent of all births stillborn.

In Table V the male and female births are given by months, with the corresponding months of conception.

The greatest number of living births in Rural Maryland was recorded in August (1,780), the corresponding period of conception being the month of November.

During 1915 the maximum number of births in Rural Maryland occurred during the month of August (1,707).

The minimum number of births during 1916 in Rural Maryland occurred in November (1,453). During 1915, November furnished the minimum number of births.

The greatest number of male births in Rural Maryland occurred in August (920). The greatest number during 1915 occurred in March (866). The greatest number of female births in 1916 occurred in August (860). The greatest number in 1915 occurred in August (846). The male births exceeded the female births in every month except January, April and October.

Table VI (stillbirths) shows practically no seasonal variation, the fluctuation being proportionate only to the number of total births.

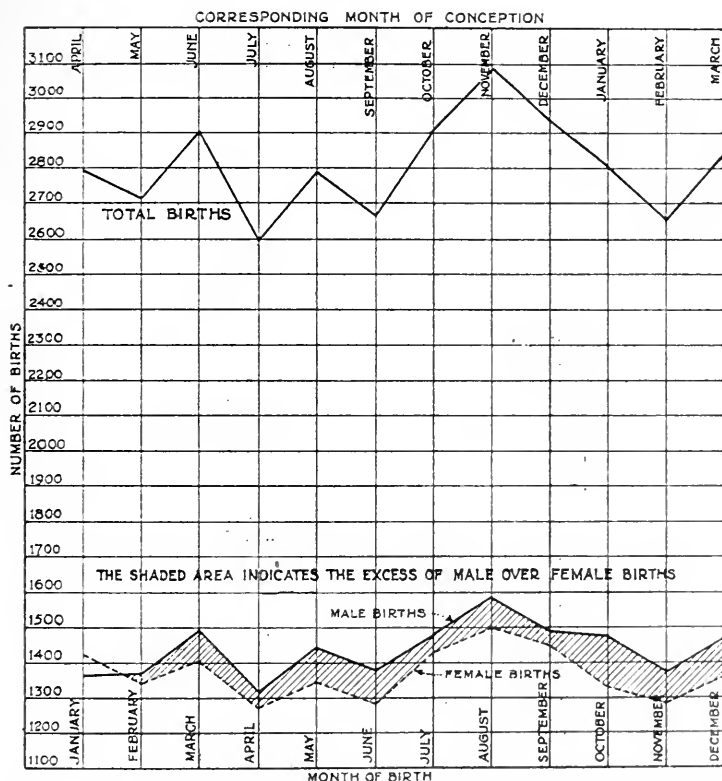


CHART 1 — Births by Months, Male, Female and Total Maryland — 1916

TABLE V.
BIRTHS, MALE AND FEMALE, BY MONTHS, MARYLAND, 1916.
Rural Maryland *Baltimore City*

Month of Birth	Corresponding Month of Conception	<i>Rural Maryland</i>			<i>Baltimore City</i>			<i>Maryland</i>		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
January	April	762	775	1,537	602	648	1,250	1,364	1,423	2,787
February	May	810	773	1,583	563	567	1,130	1,373	1,340	2,713
March	June	853	778	1,631	642	631	1,273	1,495	1,409	2,904
April	July	765	772	1,537	558	504	1,062	1,323	1,276	2,599
May	August	837	778	1,615	607	567	1,174	1,444	1,345	2,789
June	September	795	747	1,542	585	538	1,123	1,380	1,285	2,665
July	October	825	789	1,614	655	639	1,294	1,480	1,428	2,908
August	November	920	860	1,780	665	638	1,303	1,585	1,498	3,083
September	December	849	812	1,661	635	637	1,272	1,484	1,449	2,933
October	January	824	826	1,650	650	507	1,157	1,474	1,333	2,807
November	February	755	698	1,453	618	585	1,203	1,373	1,283	2,656
December	March	780	732	1,512	692	627	1,319	1,472	1,359	2,831
Total		9,775	9,340	19,115	7,472	7,088	14,560	17,247	16,428	33,675

TABLE VI.
STILLBIRTHS—MARYLAND, 1916.

RURAL MARYLAND.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
<i>White</i>	Male	52	43	48	38	51	37	33	44	45	31	41	495
	Female	36	32	31	34	26	25	24	21	30	28	24	346
	Unknown	32	27	35	34	37	52	50	42	28	34	32	441
	Total	120	102	114	106	105	114	107	107	103	93	97	1,282
<i>Colored</i>	Male	30	26	29	18	17	25	24	27	19	23	18	281
	Female	27	18	12	19	19	17	15	12	13	18	14	202
	Unknown	7	5	5	9	4	5	3	6	5	6	7	71
	Total	64	49	46	46	40	48	42	45	37	47	39	554
<i>Color Unknown</i>	Male .....	..	..	..	..	..	..	..	..	..	..	..	...
	Female .....	..	..	..	..	..	..	..	..	..	..	..	...
	Unknown .....	..	..	..	..	..	..	..	..	..	..	..	...
	Total .....	..	..	..	..	..	..	..	..	..	..	..	...
Total Rural Maryland	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	184	151	160	152	145	162	165	149	152	140	140	136	1,836

BALTIMORE CITY.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
{ Male	35	31	41	32	28	35	40	47	42	35	29	52	447
{ Female	23	15	22	26	23	23	18	14	16	20	28	15	243
{ Unknown	17	15	13	14	24	15	19	18	11	8	7	11	172
{ Total	75	61	76	72	75	73	77	79	69	63	64	78	862

White

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
{ Male	12	22	18	14	19	19	16	17	18	21	23	17	216
{ Female	16	12	9	8	5	16	18	10	13	9	8	15	139
{ Unknown	4	1	2	2	1	3	6	..	3	4	3	2	31
{ Total	32	35	29	24	25	38	40	27	34	34	34	34	386

Colored

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
{ Male
{ Female
{ Unknown	1	..	..	..	..	..	1
{ Total	1	..	..	..	..	..	1

*Color
Unknown*

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Total Baltimore City	107	96	105	96	100	111	118	106	103	97	98	112	1,249

The succeeding table (Table VII) gives illegitimate births by counties. These figures include probably all of the returns of white illegitimates and a large number of the colored illegitimates; but, owing to the peculiar marital relations of the colored race, it is difficult to establish a standard of legitimacy for children born of colored parents. Ecclesiastical marriages are not performed for a large proportion of colored persons who are living as man and wife. In 1915 in Rural Maryland there were 18.14 illegitimates per 1,000 white births and in 1916, 19.21. In the colored population, Rural Maryland in 1915 there were 184.53 illegitimates per 1,000 colored births and in 1916, 190.23 per 1,000 births.

TABLE VII.

<i>Counties</i>	<i>Number</i>			<i>Total Births</i>	<i>Illegiti- mate Births per 1,000 of Births</i>
	<i>White</i>	<i>Colored</i>	<i>Total</i>		
Allegany	48	6	54	1,787	30.22
Anne Arundel	10	78	88	1,132	77.74
Baltimore	30	29	59	3,127	18.87
Calvert	2	17	19	306	62.09
Caroline	5	28	33	450	73.33
Carroll	15	14	29	700	41.43
Cecil	16	9	25	495	50.50
Charles	2	54	56	558	100.36
Dorchester	14	57	71	844	84.12
Frederick	32	30	62	1,331	46.58
Garrett	11	..	11	554	19.86
Harford	10	23	33	537	61.45
Howard	4	12	16	367	43.60
Kent	6	43	49	396	123.74
Montgomery	2	48	50	765	65.36
Prince George's	8	48	56	979	57.20
Queen Anne's	12	30	42	434	96.77
Somerset	6	61	67	692	96.82
St. Mary's	1	37	38	488	77.87
Talbot	1	56	57	435	131.03
Washington	41	6	47	1,509	31.15
Wicomico	5	44	49	704	69.60
Worcester	8	45	53	525	100.95
Total Counties	289	775	1,064	19,115	55.66
Baltimore City	312	523	835	14,560	57.35
Total Maryland	601	1,298	1,899	33,675	56.39

In the preceding table (Table VIII) the nationality of parents of children born in Maryland during 1916 is returned in six columns. In the sub-columns the native and foreign born parents are considered separately. In the column headed "Neither Maryland," the American born parents are included, both born in the United States, but neither a native of Maryland. The foreign column is in three sub-divisions, in the first of which are included parents, both of whom are of foreign birth; and second, father foreign; and third, mother foreign. By reference to this column, it will be seen that the largest proportion of native parents occurred in Calvert County, 100%. The greatest proportion of foreign parents was in Anne Arundel County, 16.08%. Baltimore County was next with 8.47%. In seven counties the proportion of native born parents exceeded 99%, Carroll, Charles, Frederick, Kent, Somerset, Talbot and Worcester. In Calvert County 96.08% of the parents of children born in 1916 were both natives of Maryland and over 80% of the parents of children born in Carroll, Charles, Dorchester, Kent, Queen Anne's, Somerset, St. Mary's and Talbot counties were both natives of this State. In Rural Maryland at large there were 95.69% of the parents native of the United States, and 4.26% foreign born. The highest percentage of both parents foreign was in Anne Arundel County 14.58% and the highest percentage of mothers foreign was in Prince George's County, 0.92%. In Prince George's County 1.23% of the fathers were foreign born.

FECUNDITY.

Under the title of "Fecundity" is included a review of the fecundity rates and the maximum fecundities by counties in the white and colored populations. Along with these we place the tables showing maximum and minimum ages of parents, by counties and color, and the average age of parents.

TABLE IX.

TABLE OF FECUNDITY FOR WHITE AND COLORED MOTHERS BY AGE PERIODS —
RURAL MARYLAND — 1916.

White.

<i>Ages of Mothers</i>	<i>No. of Mothers</i>	<i>Total No. of Children Born</i>	<i>Total No. of Children Living</i>	<i>Total Child per Mother</i>	<i>Living Child per Mother</i>	<i>Total Children per 10,000 of Female Population</i>	<i>Living Children per 10,000 Female Population</i>	<i>Estimated Female Population</i>
10-15 years ...	6	6	6	1.00	1.00	1.84	1.84	32,540
15-20 years ...	1,492	1,860	1,766	1.25	1.18	616.69	585.52	30,161
20-25 years ...	4,125	8,190	7,425	1.99	1.80	3,036.26	2,752.65	26,974
25-30 years ...	3,767	11,920	10,582	3.16	2.81	4,918.30	4,366.23	24,236
30-35 years ...	2,848	12,826	11,164	4.50	3.92	5,748.71	5,003.80	22,311
35-40 years ...	1,928	11,824	10,100	6.13	5.24	5,618.11	4,799.01	21,046
40-45 years ...	760	5,992	4,967	7.88	6.54	3,350.11	2,777.03	17,886
45-50 years ...	78	704	590	9.03	7.56	458.66	384.39	15,349
Age Unknown .	36	121	105	3.36	2.92	.....	.....	.....
Total	15,040	53,443	46,705	3.55	3.11	2,805.36	2,451.66	190,503

Colored.

10-15 years ...	26	26	26	1.00	1.00	29.57	29.57	8,793
15-20 years ...	784	1,048	940	1.34	1.20	1,397.89	1,253.83	7,497
20-25 years ...	1,185	3,386	2,738	2.86	2.31	5,556.28	4,492.94	6,094
25-30 years ...	761	3,576	2,852	4.70	3.75	6,924.86	5,522.85	5,164
30-35 years ...	578	3,617	2,839	6.26	4.91	8,732.49	6,854.18	4,142
35-40 years ...	513	4,228	3,378	8.24	6.58	10,473.12	8,367.60	4,037
40-45 years ...	174	1,729	1,316	9.94	7.56	5,094.28	3,877.43	3,394
45-50 years ...	23	239	189	10.39	8.00	812.93	625.85	2,940
Age Unknown .	31	127	103	4.10	3.32	.....	.....	.....
Total	4,075	17,976	14,376	4.41	3.53	4,273.79	3,417.89	42,061

A few mothers included whose ages were over 50 years.

TABLE IX-A.

TABLE OF FECUNDITY FOR WHITE AND COLORED MOTHERS BY AGE PERIODS —
BALTIMORE CITY — 1916.*White.*

<i>Ages of Mothers</i>	<i>No. of Mothers</i>	<i>Total No. of Children Born</i>	<i>Total No. of Children Living</i>	<i>Total Child per Mother</i>	<i>Living Child per Mother</i>	<i>Total Children per 10,000 of Female Population</i>	<i>Living Children per 10,000 Female Population</i>	<i>Estimated Female Population</i>
10-15 years ...	3	4	4	1.33	1.33	1.75	1.75	22,826
15-20 years ...	1,130	1,373	1,293	1.22	1.14	526.76	496.06	26,065
20-25 years ...	3,829	6,907	6,265	1.80	1.64	2,558.33	2,320.54	26,998
25-30 years ...	3,331	9,456	8,324	2.84	2.50	3,971.27	3,495.86	23,811
30-35 years ...	2,192	8,955	7,691	4.09	3.51	4,375.12	3,757.57	20,468
35-40 years ...	1,307	7,566	6,264	5.79	4.79	3,951.53	3,271.53	19,147
40-45 years ...	441	3,306	2,678	7.50	6.07	1,954.01	1,582.83	16,919
45-50 years ...	34	273	215	8.03	6.32	188.50	148.45	14,483
Age Unknown .	27	104	84	3.85	3.11	.....	.....	.....
Total	12,294	37,944	32,818	3.09	2.74	2,222.60	1,922.31	170,717

Colored.

10-15 years ...	11	11	11	1.00	1.00	31.72	31.72	3,468
15-20 years ...	467	620	534	1.33	1.14	1,341.99	1,155.84	4,620
20-25 years ...	717	1,669	1,370	2.33	1.91	2,789.57	2,289.82	5,983
25-30 years ...	456	1,670	1,256	3.66	2.75	2,862.53	2,152.89	5,834
30-35 years ...	337	1,729	1,249	5.13	3.71	4,144.28	2,993.76	4,172
35-40 years ...	205	1,433	1,000	6.99	4.88	3,446.36	2,405.00	4,158
40-45 years ...	58	480	342	8.28	5.90	1,497.19	1,066.75	3,206
45-50 years ...	9	93	60	10.33	6.67	350.81	226.33	2,651
Age Unknown .	6	26	18	4.33	3.00	.....	.....	.....
Total	2,266	7,731	5,840	3.41	2.58	2,267.68	1,713.01	34,092

A few mothers included whose ages were over 50 years.

In order to ascertain the fecundity rates of the child-bearing portion of the population, Tables IX and IX-A have been devised. These tables are valuable for comparative purposes demonstrating particularly the difference in rates in a wholly urban population and the population of Maryland outside of Baltimore City which is to a large extent a rural population. Of equal interest is a comparison of the difference of rates in the white and colored populations.

Chart 2 shows the fecundity rates for Rural Maryland and Baltimore City for total children born and total children living per 10,000 of female population, white and colored in 1916.

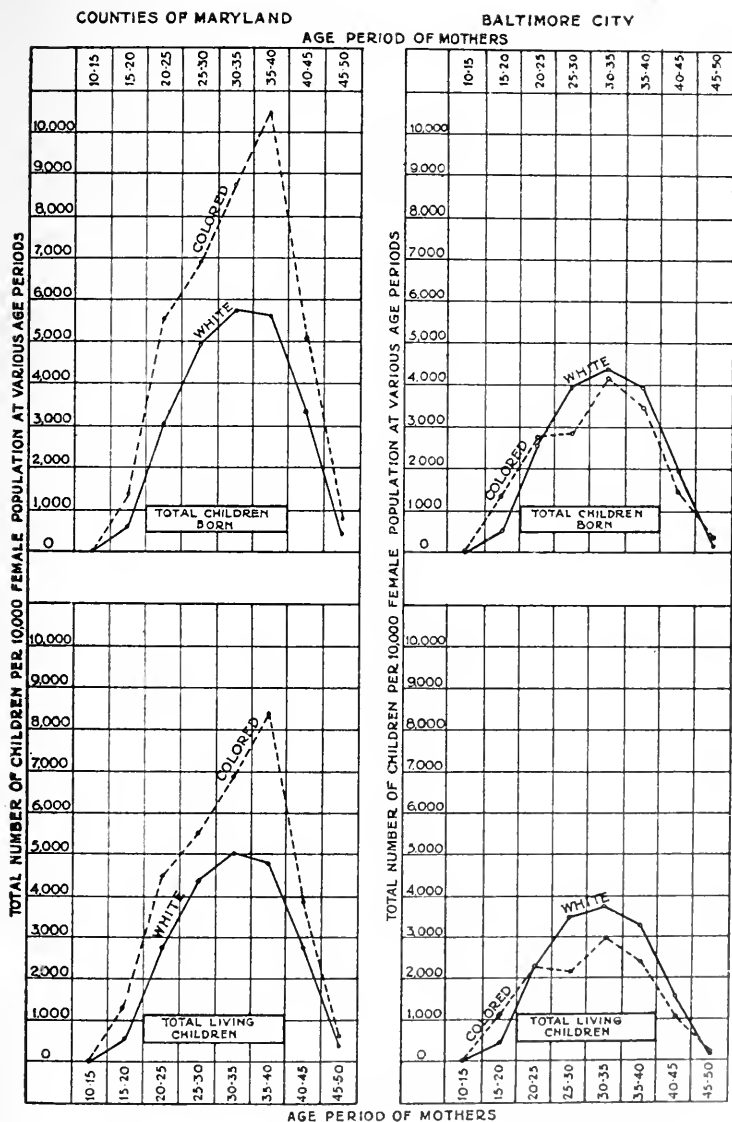


CHART 2 — Table of Fecundity for White and Colored Mothers
by Age Periods — 1916.

The succeeding table (Table X) gives figures of maximum fecundity in Rural Maryland during 1916.

Only children in excess of the tenth during 1916 are considered. Of these there were 340 white and 251 colored, a total of 591. The percentage of all births being:—white, 2.26% ; colored, 6.16% ; total, 3.09%.

Twin births occurred in the white population 166 times and in the colored population 51 times. There were also two triple births in the colored population.

TABLE X.

TABLE OF MAXIMUM FECUNDITY—NUMBER OF CHILD IN EXCESS OF TENTH BORN IN MARYLAND EXCLUSIVE OF BALTIMORE CITY, 1916.

County		11	12	13	14	15	16	17	18	19	20	21	22	23	Total	Twins	Triplets
Allegany.....	W.	25	8	1	5	1	..	..	..	..	..	..	..	..	40	22	..
	C.	2	2	..	..	..	..	..	..	..	..	..	..	..	4	1	..
Anne Arundel.....	W.	7	4	5	1	..	..	..	..	..	..	..	..	..	17	6	..
	C.	4	3	7	1	2	1	1	..	1	..	..	..	..	20	2	..
Baltimore.....	W.	23	16	9	13	4	..	1	..	1	..	..	..	..	67	37	..
	C.	1	5	3	2	2	..	..	..	..	..	..	..	..	13	3	..
Calvert.....	W.	3	..	1	..	1	..	..	..	..	..	..	..	..	5	..	..
	C.	3	3	2	1	..	2	1	..	..	..	..	..	..	12	1	..
Caroline.....	W.	1	3	..	..	1	..	..	..	..	..	..	..	..	5	4	..
	C.	5	2	6	2	..	1	..	..	1	..	..	..	..	17	3	..
Carroll.....	W.	5	2	3	..	1	1	..	..	..	..	..	..	..	12	6	..
	C.	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..
Cecil.....	W.	..	3	2	1	..	..	..	..	..	..	..	..	..	6	4	..
	C.	2	1	1	..	1	..	..	..	..	..	..	..	..	5	..	..
Charles.....	W.	..	1	1	2	..	1	..	..	..	..	..	..	..	5	6	..
	C.	11	7	9	2	2	2	..	..	..	..	..	..	..	33	3	..
Dorchester.....	W.	7	3	1	2	..	..	..	..	..	..	..	..	..	13	9	..
	C.	7	8	4	1	2	1	..	1	..	..	..	..	..	24	3	..
Frederick.....	W.	7	11	5	3	1	1	..	..	..	..	..	..	..	28	4	..
	C.	..	2	..	1	..	..	..	..	..	..	..	..	..	3	3	..
Garrett.....	W.	5	6	3	2	1	..	1	..	..	..	..	..	..	18	4	*1
	C.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Harford.....	W.	1	3	..	2	..	..	..	..	..	..	..	..	..	6	5	..
	C.	6	1	1	2	..	2	..	..	..	..	..	..	..	12	3	..
Howard.....	W.	2	3	..	..	..	..	..	..	..	..	..	..	1	6	2	..
	C.	2	..	2	2	..	..	..	..	..	..	..	1	..	7	2	..
Kent.....	W.	1	2	..	1	1	..	..	..	..	..	..	..	..	5	4	..
	C.	5	3	4	2	1	..	..	..	..	..	..	..	..	15	2	..
Montgomery.....	W.	..	4	..	1	..	1	..	..	..	..	..	..	..	6	4	..
	C.	4	2	..	..	..	1	..	1	..	..	..	..	..	8	3	..
Prince George's....	W.	1	8	7	2	..	..	..	..	..	..	1	..	..	19	5	..
	C.	4	5	7	1	1	..	1	..	..	..	..	..	..	19	8	..
Queen Anne's.....	W.	3	3	..	1	..	..	..	..	..	..	..	..	..	7	5	..
	C.	5	2	2	1	..	1	..	..	..	..	..	..	..	11	2	..
Somerset.....	W.	4	1	..	..	..	1	..	..	..	..	..	..	..	6	2	1
	C.	3	..	1	2	..	..	..	..	..	..	..	..	..	6	3	..
St. Mary's.....	W.	6	3	3	..	1	..	1	..	..	..	..	..	..	14	4	..
	C.	5	6	3	1	1	1	..	..	..	..	..	..	..	17	3	..
Talbot.....	W.	1	2	..	..	..	..	..	..	..	..	..	..	..	3	5	..
	C.	4	1	1	..	..	..	..	..	..	..	..	..	..	6	5	1
Washington.....	W.	10	12	9	5	..	1	1	..	..	..	..	..	..	38	21	..
	C.	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Wicomico.....	W.	2	5	..	2	2	..	..	..	..	..	..	..	..	11	3	..
	C.	5	2	..	..	..	..	..	..	1	..	..	..	..	8	1	..
Worcester.....	W.	..	1	..	1	..	1	..	..	..	..	..	..	..	3	1	..
	C.	2	3	2	1	1	..	..	..	..	..	..	..	..	9	..	1
White.....		114	104	50	44	13	8	3	1	1	..	1	..	1	340	166	2
Colored.....		80	59	56	22	13	12	3	2	2	1	..	1	..	251	51	2
Total.....		194	163	106	66	26	20	6	3	3	1	1	1	1	591	217	4

* One child stillborn, two living.

In table XI the maximum age of fathers and mothers of children born in Rural Maryland during 1916 are shown for the white and colored races by counties. This table considers A, maximum age of father; B, maximum age of mother; C, minimum age of father; D, minimum age of mother.

Maximum age of father, 77 years (mother 38, black).

Maximum age of mother, 55 years (father 56, black).

Minimum age of father, 16 years (mother 13, black).

Minimum age of mother, 13 years (father 16, black).

TABLE XI.

MAXIMUM AND MINIMUM AGES OF FATHERS AND MOTHERS OF CHILDREN
BORN IN MARYLAND, 1916.

ALLEGANY COUNTY.

	W.	W.	B.	W.
Age of father.....	75	55	17	21
Age of mother.....	40	48	17	14
	A.	B.	C.	D.

ANNE ARUNDEL COUNTY.

	B.	B.	B.	B.
Age of father.....	73	50	18	20
Age of mother.....	42	46	18	13
	A.	B.	C.	D.

BALTIMORE COUNTY.

	B.	W.	W.	B.
Age of father.....	65	52	17	22
Age of mother.....	39	49	25	14
	A.	B.	C.	D.

CALVERT COUNTY.

	W.	B.	B.	B.
Age of father.....	57	51	17	21
Age of mother.....	36	49	27	15
	A.	B.	C.	D.

CAROLINE COUNTY.

	B.	B.	B.	
Age of father.....	59	48	16	
Age of mother.....	37	46	13	
	A.	B.	C.-D.	

CARROLL COUNTY.

	W.	W.	B.	W.
Age of father.....	65	50	18	21
Age of mother.....	42	47	15	14
	A.	B.	C.	D.

CECIL COUNTY.

	W.	W.	W.
Age of father.....	59	49	17
Age of mother.....	34	44	16
	A.	B.	C.-D.

CHARLES COUNTY.

	B.	B.	B.
Age of father.....	75	56	18
Age of mother.....	42	55	14
	A.	B.	C.-D.

DORCHESTER COUNTY.

	W.	W.	W.	B.
Age of father.....	74	53	16	18
Age of mother.....	35	52	16	14
	A.	B.	C.	D.

FREDERICK COUNTY.

	W.	B.	B.
Age of father.....	75	44	16
Age of mother.....	26	54	14
	A.	B.	C.-D.

GARRETT COUNTY.

	W.	W.	W.	W.
Age of father.....	75	34	17	20
Age of mother.....	41	48	22	16
	A.	B.	C.	D.

HARFORD COUNTY.

	W.	W.	W.	B.
Age of father.....	56	52	18	19
Age of mother.....	34	47	21	13
	A.	B.	C.	D.

HOWARD COUNTY.

	B.	W.	B.
Age of father.....	68	18	Unk.
Age of mother.....	50	17	15
	A.-B.	C.	D.

KENT COUNTY.

	B.	B.	B.
Age of father.....	68	50	18
Age of mother.....	43	44	14
	A.	B.	C.-D.

MONTGOMERY COUNTY.

	W.	W.	B.	B.
Age of father.....	70	61	17	19
Age of mother.....	24	45	19	14
	A.	B.	C.	D.

PRINCE GEORGE'S COUNTY.

	W.	B.	B.	W.
Age of father.....	68	52	18	52
Age of mother.....	44	47	16	15
	A.	B.	C.	D.

QUEEN ANNE'S COUNTY.

	W.	W.	B.	
Age of father.....	63	50	16	
Age of mother.....	43	45	14	
	A.	B.	C.-D.	

SOMERSET COUNTY.

	B.	W.	B.	W.
Age of father.....	77	54	16	24
Age of mother.....	38	47	17	15
	A.	B.	C.	D.

ST. MARY'S COUNTY.

	B.	W.	W.	B.
Age of father.....	67	50	18	22
Age of mother.....	41	46	28	13
	A.	B.	C.	D.

TALBOT COUNTY.

	W.	W.	B.	B.
Age of father.....	60	43	17	Unk.
Age of mother.....	20	45	14	13
	A.	B.	C.	D.

WASHINGTON COUNTY.

	W.	W.	W.	W.
Age of father.....	60	38	18	21
Age of mother.....	37	48	16	15
	A.	B.	C.	D.

WICOMICO COUNTY.

	W.	W.	B.	B.
Age of father.....	64	45	16	17
Age of mother.....	32	46	19	14
	A.	B.	C.	D.

WORCESTER COUNTY.

	B.	W.	B.	W.
Age of father.....	69	58	16	21
Age of mother.....	30	44	16	14
	A.	B.	C.	D.

BALTIMORE CITY.

	W.	W.	B.	B.
Age of father.....	72	37	15	18
Age of mother.....	42	55	21	13
	A.	B.	C.	D.

AVERAGE AGES OF PARENTS.

The succeeding table (Table XII) gives the ages of fathers and mothers of children born in Rural Maryland and Baltimore City for the year 1916. The table demonstrates the superior fecundity of females in early life and the superior fecundity of males at the higher age periods. This table shows an earlier average age for parents in Baltimore City than in Rural Maryland.

TABLE XII.

AGES OF PARENTS OF CHILDREN BORN IN MARYLAND DURING 1916.

<i>Age Period</i>	<i>Rural Maryland</i>				<i>Baltimore City</i>			
	<i>Number of Fathers</i>	<i>Per Cent</i>	<i>Number of Mothers</i>	<i>Per Cent</i>	<i>Number of Fathers</i>	<i>Per Cent</i>	<i>Number of Mothers</i>	<i>Per Cent</i>
10-15 .....	.....	.....	32	0.17	.....	.....	14	0.10
15-20	309	1.62	2,276	11.91	207	1.42	1,597	10.97
20-25	3,544	18.54	3,310	27.78	2,943	20.21	4,546	31.22
25-30	4,672	24.44	4,528	23.69	4,142	28.45	3,787	26.01
30-35	3,810	19.93	3,426	17.92	3,100	21.29	2,529	17.37
35-40	3,039	15.90	2,441	12.77	2,107	14.47	1,512	10.38
40-45	1,988	10.40	934	4.89	1,177	8.08	499	3.43
45-50	954	4.99	.....	.....	493	3.39	.....	.....
50 and over....	551	2.88	.....	.....	209	1.44	.....	.....
45 and over....	.....	.....	101	0.53	.....	.....	43	0.30
Age unknown..	248	1.30	67	0.35	182	1.25	33	0.23
Total.....	19,115		19,115		14,560		14,560	

Eight mothers at the age of thirteen; thirty-eight mothers at the age of fourteen.

Table XIII gives the average ages of parents of children born in Rural Maryland for the years 1907 to 1916 inclusive. Except for slight variations in any single year the average age of both fathers and mothers remains the same. The average difference between the ages of parents shows no marked variation.

TABLE XIII.

AVERAGE AGE OF PARENTS OF CHILDREN BORN IN RURAL MARYLAND,
1907-1916.

<i>Year</i>	<i>Average Age of Father</i>	<i>Average Age of Mother</i>	<i>Average Difference Between Father's and Mother's Ages</i>
1907	33.06	28.42	4.64
1908	32.93	28.31	4.62
1909	32.97	28.36	4.61
1910	32.83	28.32	4.51
1911	32.85	28.35	4.50
1912	32.76	28.23	4.53
1913	32.82	28.23	4.59
1914	32.53	28.00	4.53
1915	32.48	27.99	4.49
1916	32.41	27.91	4.50

BIRTH REGISTRATION.

For the purpose of ascertaining the extent of the practice of midwives as shown by registration, two tables were made. Table XIV gives the actual number of births attended by physicians, midwives or others, i. e., no physician or midwife in attendance. Of a total 27,335 white births, 21,156 mothers were attended by physicians, 6,043 by midwives and 136 did not have the attendance of either a physician or midwife. Of a total of 6,340 colored births, 3,285 received the attention of a physician, 2,981 were attended by midwives and 74 had neither the attention of physician or midwife. The total number of births attended by physicians was 24,441, the total number by midwives was 9,024, and the total number without the attention of midwife or physician was 210.

TABLE XIV.

PROPORTION OF BIRTHS ATTENDED BY PHYSICIANS AND MIDWIVES, WHITE AND COLORED, MARYLAND, 1916.

Counties	White				Colored				Total
	Physician	Midwife	Other Person	Total	Physician	Midwife	Other Person	Total	
Allegany	1,617	112	20	1,749	30	7	1	38	1,787
Anne Arundel	532	209	4	745	106	274	7	387	1,132
Baltimore	2,104	751	15	2,870	166	86	5	257	3,127
Calvert	98	50	0	148	19	139	0	158	306
Caroline	215	93	1	309	31	108	2	141	450
Carroll	634	11	5	650	42	7	1	50	700
Cecil	442	2	3	447	36	12	0	48	495
Charles	135	101	4	240	31	273	14	318	558
Dorchester	447	96	9	552	114	174	4	292	844
Frederick	1,144	31	19	1,194	110	24	3	137	1,331
Garrett	507	23	24	554	0	0	0	0	554
Harford	414	1	4	419	88	23	7	118	537
Howard	252	18	2	272	57	36	2	95	367
Kent	189	34	1	224	49	121	2	172	396
Montgomery	499	12	2	513	140	109	3	252	765
Prince George's...	541	84	3	628	102	242	7	351	979
Queen Anne's	254	30	0	284	55	93	2	150	434
Somerset	393	31	1	425	112	154	1	267	692
St. Mary's	185	84	1	270	58	160	0	218	488
Talbot	236	31	2	269	42	121	3	166	435
Washington	1,383	84	10	1,477	27	5	0	32	1,509
Wicomico	398	86	3	487	99	115	3	217	704
Worcester	261	53	1	315	44	159	7	210	525
Total	12,880	2,027	134	15,041	1,558	2,442	74	4,074	19,115
Baltimore City ...	8,276	4,016	2	12,294	1,727	539	0	2,266	14,560
Maryland	21,156	6,043	136	27,335	3,285	2,981	74	6,340	33,675

Table XV gives the percentage of births, white and colored, attended by physicians and midwives respectively. In all counties the majority of white mothers had the attendance of a physician. In Charles County, 42.08% of white births were attended by midwives and in a number of other counties, namely, Anne Arundel, Baltimore, Calvert, Caroline, Charles and St. Mary's, over 25% of white mothers were attended by midwives.

Counties in which the largest proportion of white mothers had neither the services of physicians or midwives were Garrett, 4.33% of births reported, and Charles, 1.67% of births reported. The practice of obstetrics by midwives is seen largely among the colored women. In fourteen counties over 50% of colored births were attended by midwives. The county in which the largest percentage of colored mothers were attended by midwives is Calvert County, 87.97%, Charles County second with 85.85%. The counties in which the largest percentage of colored mothers had neither the attention of physician or midwife are Harford, 5.93% and Charles County 4.40%.

TABLE XV.

PERCENTAGE OF BIRTHS ATTENDED BY PHYSICIANS AND MIDWIVES, WHITE AND COLORED, MARYLAND, 1916.

Counties	Percentage of White Births			Percentage of Colored Births		
	Physicians	Midwives	Others	Physicians	Midwives	Others
Allegany	92.45	6.40	1.14	78.95	18.42	2.63
Anne Arundel	71.41	28.05	0.54	27.39	70.80	1.81
Baltimore	73.31	26.17	0.52	64.59	33.46	1.95
Calvert	66.22	33.78	0.00	12.03	87.97	0.00
Caroline	69.58	30.10	0.32	21.99	76.60	1.42
Carroll	97.54	1.69	0.77	84.00	14.00	2.00
Cecil	98.88	0.45	0.67	75.00	25.00	0.00
Charles	56.25	42.08	1.67	9.75	85.85	4.40
Dorchester	80.98	17.39	1.63	39.04	59.59	1.37
Frederick	95.81	2.60	1.59	80.29	17.52	2.19
Garrett	91.52	4.15	4.33	0.00	0.00	0.00
Harford	98.81	0.24	0.95	74.58	19.49	5.93
Howard	92.65	6.62	0.74	60.00	37.89	2.11
Kent	84.38	15.18	0.45	28.49	70.35	1.16
Montgomery	97.27	2.34	0.39	55.56	43.25	1.19
Prince George's	86.15	13.38	0.48	29.06	68.95	1.99
Queen Anne's	89.44	10.56	0.00	36.67	62.00	1.33
Somerset	92.47	7.29	0.24	41.95	57.68	0.37
St. Mary's	68.52	31.11	0.37	26.61	73.39	0.00
Talbot	87.73	11.52	0.74	25.30	72.89	1.81
Washington	93.64	5.69	0.68	84.38	15.63	0.00
Wicomico	81.72	17.66	0.62	45.62	53.00	1.38
Worcester	82.86	16.83	0.32	20.95	75.71	3.33
Total Counties	85.63	13.48	0.89	38.24	59.94	1.82
Baltimore City	67.32	32.67	0.02	76.21	23.79	0.00
Maryland	77.40	22.11	0.50	51.81	47.02	1.17

Table XVI gives the births, estimated population and births per 1,000 in cities of Maryland with population of 2,000 and over. Upon investigation we found it was the practice of physicians and midwives to enter the nearest town as the address instead of giving the exact location and in this manner a number of births which did not occur within their limits were credited to some cities. A system has been devised which will correct this error in tables beginning with the year 1917.

TABLE XVI.

BIRTHS BY SEX AND COLOR, ESTIMATED POPULATION AND BIRTH RATES PER 1,000 OF CITIES AND TOWNS IN MARYLAND WITH POPULATION OF 2,000 AND OVER, 1916.

	<i>Male</i>	<i>Female</i>	<i>White</i>	<i>Colored</i>	<i>Total</i>	<i>Estimated Population</i>	<i>Births per 1,000</i>
Baltimore City	7,472	7,088	12,294	2,266	14,560	589,623	24.69
Cumberland	359	348	675	32	707	26,074	27.12
Frostburg	94	81	171	4	175	6,502	26.91
Westernport	48	57	103	2	105	3,145	33.39
Annapolis	99	104	142	61	203	8,760	23.17
Westminster	37	39	69	7	76	3,355	22.65
Elkton	40	24	60	4	64	2,452	26.10
Cambridge	116	116	162	70	232	6,822	34.01
Frederick City	130	130	225	35	260	11,112	23.40
Brunswick	67	64	126	5	131	4,507	29.07
Havre de Grace	42	37	58	21	79	4,708	16.78
Chestertown	24	30	31	23	54	2,563	21.07
Laurel	25	21	41	5	46	2,626	17.52
Hyattsville	22	27	42	7	49	2,354	20.82
Crisfield	67	70	96	41	137	3,659	37.44
Easton	59	52	75	36	111	3,089	35.93
Hagerstown	376	335	698	13	711	25,679	27.69
Salisbury	104	94	142	56	198	8,207	24.13
Pocomoke City	44	37	39	42	81	2,523	32.10
Total	9,225	8,754	15,249	2,730	17,979	717,760	25.05

One case sex unknown.

DEATHS IN MARYLAND.

The total number of deaths recorded in Maryland during 1916 was 22,510; of these, 12,472 occurred in Rural Maryland and 10,038 in Baltimore City.

The total number of white deaths was 16,575; of colored deaths, 5,935.

The total number of male deaths was 11,837; of female deaths, 10,673.

Table III and III-A give the births, deaths and increase and the birth rates, death rates and rate of increase (per 1,000) for the white and colored population of Maryland.

Table IV gives the births, birth rates, deaths, death rates and excess of births over deaths per 1,000 of population for the male, female, white and colored, and total population of Rural Maryland, Baltimore City and the State of Maryland.

TABLE XVII.

DEATHS BY SEX AND COLOR, ESTIMATED POPULATION AND DEATH RATES PER 1,000 OF CITIES AND TOWNS IN MARYLAND WITH POPULATION OF 2,000 AND OVER, 1916.

	<i>Male</i>	<i>Female</i>	<i>White</i>	<i>Colored</i>	<i>Total</i>	<i>Estimated Population</i>	<i>Deaths per 1,000</i>
Baltimore City	5,186	4,852	7,568	2,470	10,038	589,623	17.02
Cumtreland	241	194	405	30	435	26,074	16.68
Hagerstown	210	167	333	44	377	25,679	14.68
Frederick	90	97	150	37	187	11,112	16.83
Annapolis	91	80	91	80	171	8,760	19.52
Salisbury	111	85	130	66	196	8,207	23.88
Cambridge	83	100	99	84	183	6,822	26.82
Frostburg	78	47	119	6	125	6,502	19.22
Havre de Grace.....	51	33	65	19	84	4,708	17.84
Brunswick	21	20	39	2	41	4,507	9.10
Crisfield	41	33	37	37	74	3,659	20.22
Westminster	29	30	50	9	59	3,355	17.59
Easton	61	71	78	54	132	3,089	42.73
Westernport	23	22	43	2	45	3,145	14.31
Laurel	26	20	33	13	46	2,626	17.52
Chestertown	21	25	23	23	46	2,563	17.95
Pocomoke City	26	33	43	16	59	2,523	23.38
Elkton	37	34	46	25	71	2,452	28.96
Hyattsville	12	21	29	4	33	2,354	14.02
Total	6,438	5,964	9,381	3,021	12,402	717,760	17.28

Table XVII gives deaths male, female, white, colored, estimated population and deaths per 1,000 for cities of Rural Maryland with a population of 2,000 or over. The rates for a number of the cities as given in the table are high. There are two reasons for this, first, that a number of the cities support hospitals and all the deaths which occur in the hospitals add to the death rate for the cities; second, the improper addresses on certificates causes a number of deaths which did not occur within the corporate limits of the cities to be included in the total number of deaths.

We have taken means to eliminate the error in all tables beginning in 1917.

TABLE XVIII.

DEATHS FOR THE YEAR 1916 BY AGES, SHOWING PERCENTAGES OF TOTAL MORTALITY IN THE SEVERAL AGE PERIODS OF LIFE IN RURAL MARYLAND, BALTIMORE CITY AND THE STATE OF MARYLAND.

<i>Age Periods</i>	<i>Rural Maryland</i>		<i>Baltimore City</i>		<i>Maryland</i>	
	<i>Deaths</i>	<i>Per Ct.</i>	<i>Deaths</i>	<i>Per Ct.</i>	<i>Deaths</i>	<i>Per Ct.</i>
0-1 year	2,302	18.46	1,772	17.65	4,074	18.10
1-5 years	790	6.34	648	6.46	1,438	6.39
5-10 years	241	1.93	190	1.89	431	1.91
10-15 years	216	1.73	115	1.15	331	1.47
15-20 years	365	2.93	229	2.28	594	2.64
20-25 years	479	3.84	342	3.41	821	3.65
25-30 years	434	3.48	394	3.92	828	3.68
30-35 years	425	3.41	418	4.16	843	3.75
35-40 years	447	3.58	462	4.60	909	4.04
40-45 years	462	3.70	561	5.59	1,023	4.54
45-50 years	539	4.32	614	6.12	1,153	5.12
50-55 years	586	4.70	643	6.41	1,229	5.46
55-60 years	661	5.30	646	6.44	1,307	5.81
60-65 years	736	5.90	663	6.69	1,399	6.22
65-70 years	907	7.27	640	6.38	1,547	6.87
70-75 years	906	7.26	625	6.23	1,531	6.80
75-80 years	852	6.83	517	5.15	1,369	6.08
80 years and over..	1,048	8.40	559	5.57	1,607	7.14
Age unknown	76	0.61	...	....	76	0.34
Total	12,472		10,038		22,510	

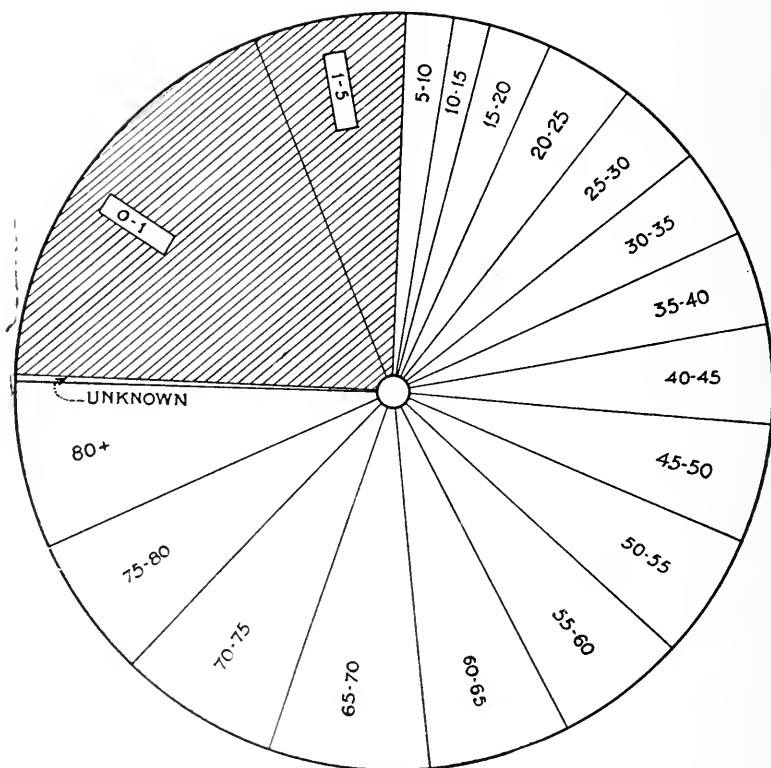


CHART 3 — *State of Maryland — Deaths by Ages — 1916.*

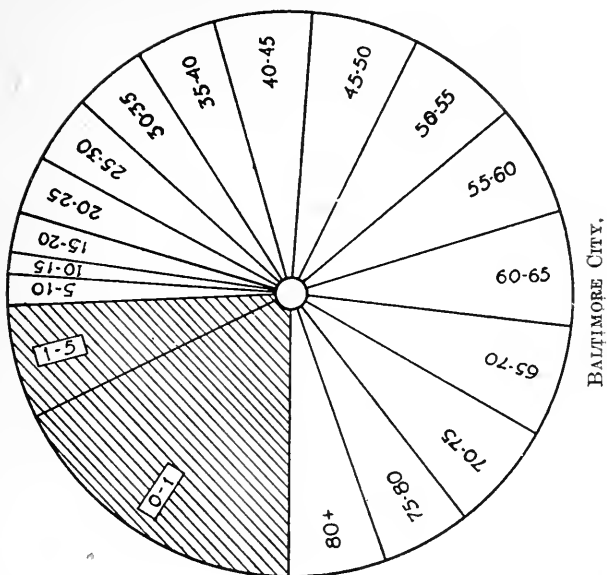
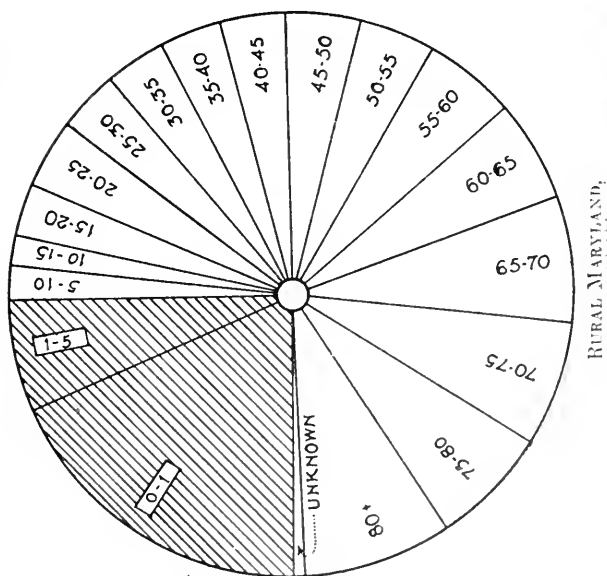


CHART 4 — Deaths by Ages — 1916.



The preceding table (Table XVIII) gives the distribution of the deaths in Rural Maryland, Baltimore City and the State of Maryland, according to age, giving the number of deaths at each age period and the percentages of total mortality. Chart 3 and Chart 4 show graphically the percentage of deaths at the several age periods; the charts indicate the excessive percentage of deaths in infancy (under 2 and under 5 years).

This table shows that the infantile mortality is slightly higher in Rural Maryland than in Baltimore City, as 18.46% of the deaths in Rural Maryland occurred under the age of 1 year and 17.65% in Baltimore City. The figures under the age of 5 for Baltimore City are 24.11% and for Rural Maryland, 24.80%. This difference is shown graphically in the accompanying charts.

Tables XIX-A, XIX-B, XIX-C give the estimated population, death rates per 1,000 at age periods and the mortality per 1,000 for age periods for the white, colored and total populations of Maryland. The mortality per 1,000 at age periods in the total population is lowest in the 3rd quinquennium after which it slowly rises until the period between 60 and 65 years when it exceeds the mortality at the period of 0-5 years.

The uniformly higher death rate by ages in the colored population is well demonstrated up to the age period of 55-60 when the colored mortality almost doubles the white.

TABLE XIX-A.

POPULATION AND DEATHS PER THOUSAND AT THE SEVERAL AGE PERIODS —
MARYLAND, 1916.

<i>Ages</i>	<i>Per Cent</i>	<i>Estimated Population</i>	<i>Deaths</i>	<i>Mortality Per 1,000 of Those Living at the Age</i>	<i>Mortality Per 1,000 for Age Periods</i>
Under 5 years.....	10.61	144,596	5,512	38.12	190.60
5 to 10 years.....	10.29	140,246	431	3.07	15.35
10 to 15 years.....	9.99	136,101	331	2.43	12.15
15 to 20 years.....	9.88	134,585	594	4.41	22.05
20 to 25 years.....	9.50	129,473	821	6.34	31.70
25 to 30 years.....	8.49	115,660	828	7.16	35.80
30 to 35 years.....	7.40	100,860	843	8.36	41.80
35 to 40 years.....	7.12	97,034	909	9.37	46.85
40 to 45 years.....	6.07	82,757	1,023	12.36	61.80
45 to 50 years.....	5.24	71,443	1,153	16.14	80.70
50 to 55 years.....	4.57	62,235	1,229	19.75	98.75
55 to 60 years.....	3.34	45,486	1,307	28.73	143.65
60 to 65 years.....	2.70	36,819	1,399	38.00	190.00
65 to 70 years.....	2.05	27,986	1,547	55.28	276.40
70 to 75 years.....	1.36	18,590	1,531	82.36	411.80
75 to 80 years.....	0.76	10,370	1,369	132.02	660.10
80 years and over..	0.53	7,174	1,607	224.00	.....
Unknown	0.10	1,391	76	54.64	.....
Total		1,362,806	22,510	16.52	

TABLE XIX-B.

ESTIMATED WHITE POPULATION AND DEATHS PER THOUSAND AT THE AGE PERIODS FOR THE YEAR 1916 — MARYLAND'S ESTIMATED WHITE POPULATION, 1,131,930.

<i>Ages</i>	<i>Per Cent</i>	<i>Estimated Population</i>	<i>Deaths</i>	<i>Mortality Per 1,000 of Those Living at the Age</i>	<i>Mortality Per 1,000 for Age Periods</i>
Under 5 years.....	10.50	118,853	3,656	30.76	153.80
5 to 10 years.....	10.13	114,665	304	2.65	13.25
10 to 15 years.....	9.87	111,721	195	1.75	8.75
15 to 20 years.....	9.84	111,382	338	3.03	15.15
20 to 25 years.....	9.37	106,062	477	4.50	22.50
25 to 30 years.....	8.37	94,743	540	5.70	28.50
30 to 35 years.....	7.45	84,329	575	6.70	33.50
35 to 40 years.....	7.11	80,480	612	7.60	38.00
40 to 45 years.....	6.12	69,274	689	9.95	49.75
45 to 50 years.....	5.30	59,992	853	14.22	71.10
50 to 55 years.....	4.67	52,861	910	17.21	86.05
55 to 60 years.....	3.48	39,391	1,035	26.28	131.40
60 to 65 years.....	2.80	31,694	1,121	35.37	176.85
65 to 70 years.....	2.14	24,223	1,331	54.95	274.75
70 to 75 years.....	1.42	16,073	1,323	82.31	411.55
75 to 80 years.....	0.81	9,169	1,219	132.95	664.75
80 years and over..	0.54	6,112	1,363	223.00	.....
Unknown	0.08	906	34	37.53	.....
Total		1,131,930	16,575	14.64	

TABLE XIX-C.

ESTIMATED COLORED POPULATION AND DEATHS PER THOUSAND AT THE AGE PERIODS FOR THE YEAR 1916 — MARYLAND'S ESTIMATED COLORED POPULATION, 230,876.

<i>Ages</i>	<i>Per Cent</i>	<i>Estimated Population</i>	<i>Deaths</i>	<i>Mortality Per 1,000 of Those Living at the Age</i>	<i>Mortality Per 1,000 for Age Periods</i>
Under 5 years.....	11.15	25,743	1,856	72.10	360.50
5 to 10 years.....	11.08	25,581	127	4.96	24.80
10 to 15 years.....	10.56	24,380	136	5.58	27.90
15 to 20 years.....	10.05	23,203	256	11.03	55.15
20 to 25 years.....	10.14	23,411	344	14.69	73.45
25 to 30 years.....	9.06	20,917	288	13.77	68.85
30 to 35 years.....	7.16	16,531	268	16.21	81.05
35 to 40 years.....	7.17	16,554	297	17.94	89.70
40 to 45 years.....	5.84	13,483	334	24.77	123.85
45 to 50 years.....	4.96	11,451	300	26.20	131.00
50 to 55 years.....	4.06	9,374	319	34.03	170.15
55 to 60 years.....	2.64	6,095	272	44.63	223.15
60 to 65 years.....	2.22	5,125	278	54.24	271.20
65 to 70 years.....	1.63	3,763	216	57.40	287.00
70 to 75 years.....	1.09	2,517	208	82.64	413.20
75 to 80 years.....	0.52	1,201	150	124.90	624.50
80 years and over..	0.46	1,062	244	229.76	.....
Unknown	0.21	485	42	86.60	.....
Total		230,876	5,935	25.71	

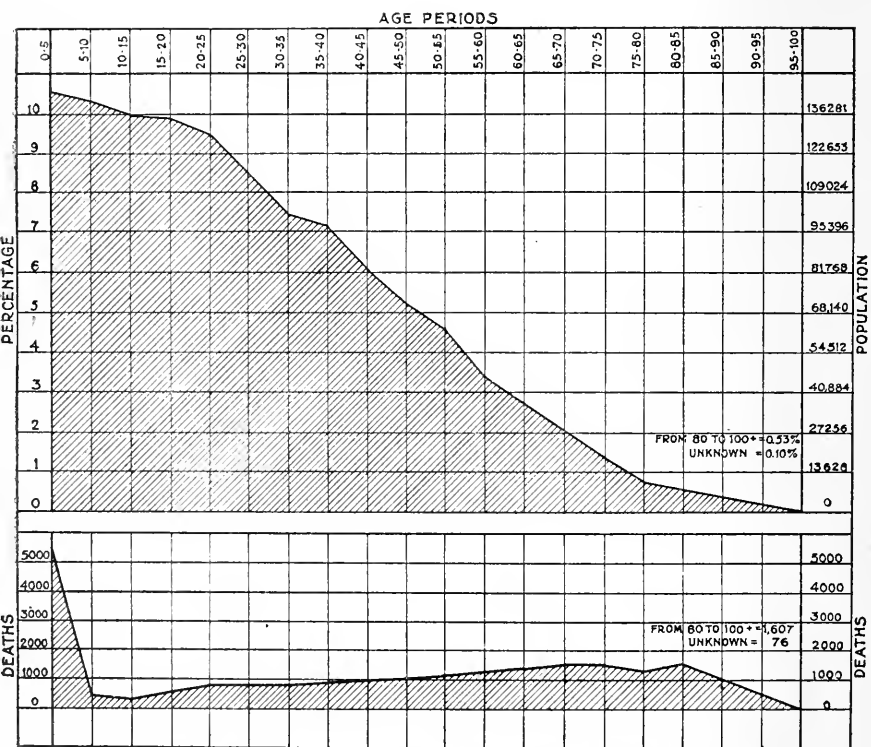


CHART 5 — Distribution of the Population and Deaths by Ages, Maryland, 1916.

The figures for the total population (Table XIX-A) are graphically shown in Chart 5. The profile of the black area, including the portion below, indicates the population; the number of deaths is shown in the black area described below.

From the chart it is seen that the curve plotted for population and the curve plotted for deaths bear no relation to one another except in the first period, 0-5 years. The deaths are fewer in the larger populations and as the population diminishes, the deaths increase.

The diseases producing the general mortality analyzed in the preceding tables are shown in Tables A and B, at the end of the report, and in the special tables of this section.

It is evident from the sanitary point of view that important differences exist in the nature of these diseases in their relations to the public health, both as regards their infectiousness and the possibility of their prevention; accordingly, the diseases have been classified in the table from a strictly sanitary standpoint.

The following main divisions have been recognized—parasitic diseases, constitutional diseases, congenital diseases and malformations, poisonings and intoxications, malignant neoplasms, degenerations, pregnancy and violence; other obscure affections not properly falling in one of the previous classes.

The most important of these classes is that including parasitic diseases, which are mostly communicable, and are to a large extent subject to sanitary control. All diseases of parasitic origin may be assumed to be communicable to a certain degree, although important differences exist as to the amount and extent of their contagiousness. Accordingly, these diseases are considered in three classes; (a) infectious and contagious diseases; (b) communicable diseases; (c) other infections of parasitic origin.

The diseases classified under each heading are shown in Table XX. Parasitic diseases form a class largely under the control of sanitary authorities. The diseases classified under de are to some extent controlled by law. Constitutional dyscrasias are not, as a rule, subject to administrative control, while congenital diseases and malformations are wholly beyond administrative influence. Deaths from violence are also usually outside the control of sanitary authorities. The diseases classified under degenerations and malignant neoplasms form a class of maladies which are not capable of control by our present methods. The comparative importance of these classes as causes of death is graphically shown in Chart 6.

TABLE XX.

A CLASSIFICATION OF CAUSES OF DEATH WITH THE NUMBER OCCURRING AND THEIR RATIOS TO THE MORTALITY (MARYLAND, 1916).

<i>Diseases.</i>	<i>Balto. City</i>	<i>Rural Mary- land</i>	<i>Total</i>	<i>P. C. of Total Mort.</i>
PARASITIC DISEASES.				
(Infectious and Contagious Diseases.)				
Typhoid fever, scarlatina, whooping cough, diphtheria, influenza, smallpox, measles, glanders, anthrax, actinomycosis	390	713	1,103	4.90
(*Communicable Diseases.)				
Malaria, dysentery, tuberculosis, syphilis, tetanus, pneumonia, gonorrhœa, rabies, erysipelas....	1,953	2,462	4,415	19.61
(†Other Infections.)				
Septicæmia, pyemia, rheumatism (febril), meningitis, bronchitis, broncho-pneumonia, gastro-intestinal inflammations (summer diarrhœa of infants), cholera nostras, tonsillitis, pharyngitis, cholecystitis (and other inflammations of the liver and gall bladder), pericarditis, cystitis, peritonitis, acute nephritis, gangrene, abscess, furuncle, pleurisy, appendicitis, laryngitis, metritis, endometritis, endocarditis (acute), salpingitis, pellagra	1,873	2,131	4,004	17.79
Total Parasitic Diseases.....	4,216	5,306	9,522	42.30
CONSTITUTIONAL DYSCRASIAS.				
Diabetes, exophthalmic goitre, gout, anæmia, chlorosis, leukemia, Addison's disease.....	182	174	356	1.58
CONGENITAL DISEASES AND MALFORMATIONS.				
Morbus cereuleus, icterus neonatorum, marasmus, sclerema	567	794	1,361	6.04
POISONINGS AND INTOXICATIONS.				
Alcoholism, saturnism and occupational intoxications, scorbutus	34	74	108	0.48
MALIGNANT NEOPLASMS.				
Epithelioma, carcinoma, sarcoma.....	593	603	1,196	5.31
† DEGENERATIONS.				
Cerebral congestion and hemorrhage, paralysis (without specified cause), meningo-encephalitis, cerebral softening (?), epilepsy, organic diseases of the heart, angina pectoris, arteriosclerosis, aneurism (and allied arterial degenerations), asthma (in all forms), Bright's disease, senile debility and dementia, locomotor ataxia, myelitis, insanity.....	3,049	3,558	6,607	29.35
PREGNANCY.				
Puerperal hemorrhage, puerperal septicæmia, puerperal albuminuria and convulsions, plegmasia alba dolens.....	102	110	212	0.94

VIOLENCE.

Suicide, homicide, murder, dueling, accidental violence, poisoning, gas inhalation, drowning, strangulation and legal execution, death by insulation, lightning, freezing, burns and scalds

All other causes

	Balto. City	Rural Mary- land	Total	P. C. of Total Mort.
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565	759	1,324	5.88
730	1,094	1,824	8.10

Total	10,038	12,472	22,510
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* All communicable diseases have been assumed to be due to a living organism, and included in this list whether the specific cause has been discovered or not.

† The distinction between these three classes is one of kind, rather than degree, as all parasitic diseases may at some time be communicable.

‡ Includes mainly the disorders dependent on advanced years and prolonged strain.

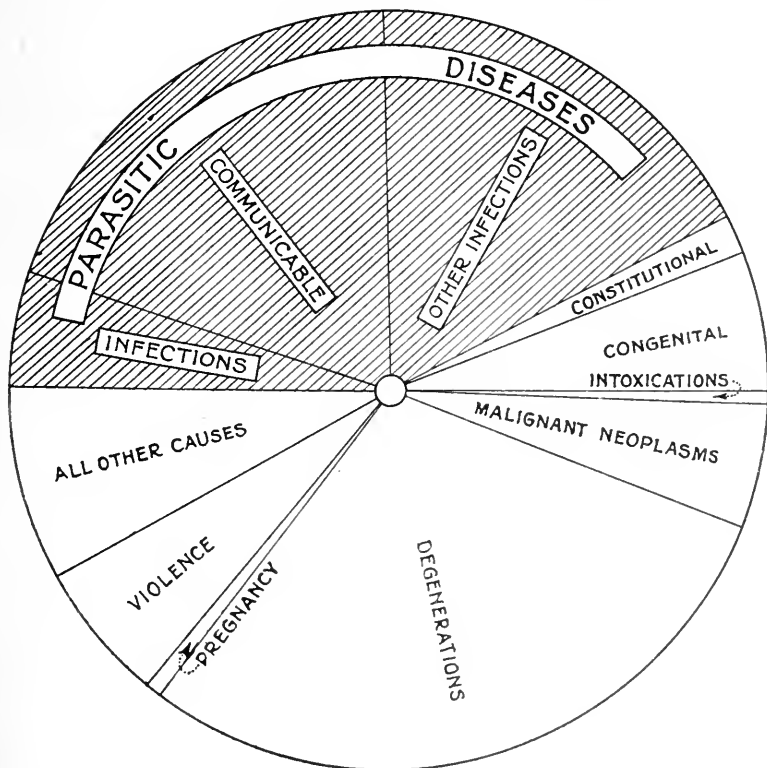


CHART 6 — Classification of Causes of Death in Maryland — 1916.

PRINCIPAL CAUSES OF DEATH.

The principal causes of death are separately considered, as together they cause about seventy-five per cent. of the total mortality, and they are in the main, preventable diseases.

In Table XXI the twenty principal causes of death are tabulated for Rural Maryland, Baltimore City and Total Maryland. The causes come in their proper numerical order under the column marked "Total Maryland." The percentages and figures are entered in the columns marked "Rural Maryland" and "Baltimore City" but do not follow in numerical order.

Deaths from tuberculosis always occupies first place in this table and deaths from organic heart disease and chronic Bright's disease occupy respectively the second and third places. Deaths from cerebral congestion and hemorrhage will always be found in the upper part of this table and causes like diarrhoea and enteritis, broncho-pneumonia, typhoid fever and influenza or other infectious diseases should gradually take lower positions. Diphtheria for a number of years has been eliminated from the table altogether, while such causes as accidental violence and malignant neoplasms assume more important positions.

TABLE XXI.
 TWENTY PRINCIPAL CAUSES OF DEATH, MARYLAND, 1916.

	Rural Maryland				Baltimore City				Maryland			
	Deaths	Per Cent of Total Mortality	Mortality per 10,000		Deaths	Per Cent of Total Mortality	Mortality per 10,000		Deaths	Per Cent of Total Mortality	Mortality per 10,000	
Tuberculosis, Pulmonary and Laryngeal.....	*1,505	12.07	19.46		862	8.59	14.62		2,367	10.52	17.36	
Organic Heart Disease.....	1,015	8.14	13.13		998	9.94	16.93		2,013	8.94	14.77	
Chronic Bright's Disease.....	895	7.18	11.58		888	8.85	15.06		1,783	7.92	13.08	
Cerebral Congestion and Hemorrhage.....	693	5.56	8.96		680	6.77	11.53		1,373	6.10	10.07	
Malignant Neoplasms.....	603	4.83	7.80		593	5.91	10.06		1,196	5.31	8.77	
Pneumonia, Lobar.....	625	5.01	8.08		765	7.62	12.97		1,390	6.18	10.19	
Diarrhea and Enteritis (under 2 years).....	697	5.59	9.01		581	5.79	9.85		1,278	5.68	9.37	
Congenital Debility.....	678	5.44	8.77		456	4.54	7.73		1,134	5.04	8.32	
Broncho-Pneumonia.....	553	4.43	7.15		576	5.74	9.77		1,129	5.02	8.28	
Accidental Violence.....	571	4.58	7.39		365	3.63	6.19		936	4.16	6.87	
Paralysis.....	348	2.79	4.50		50	0.50	0.85		398	1.77	2.92	
Typhoid Fever.....	162	1.30	2.10		104	1.04	1.76		266	1.18	1.95	
Affections of the Arteries.....	135	1.08	1.75		166	1.65	2.82		301	1.34	2.21	
Senile Debility.....	221	1.77	2.86		83	0.83	1.41		304	1.35	2.23	
Diarrhea and Enteritis (2 years and over).....	153	1.23	1.98		82	0.82	1.39		235	1.04	1.72	
Influenza.....	211	1.69	2.73		128	1.28	2.17		339	1.51	2.49	
Gastric Diseases.....	78	0.63	1.01		46	0.46	0.78		124	0.55	0.91	
Convulsions (infantile).....	63	0.51	0.81		30	0.30	0.51		93	0.41	0.68	
Whooping Cough.....	112	0.90	1.45		63	0.63	1.07		175	0.78	1.28	
Meningitis.....	57	0.46	0.74		49	0.49	0.83		106	0.47	0.78	

* Including 350 deaths of residents of Baltimore City who died at Tuberculosis Sanatoria.

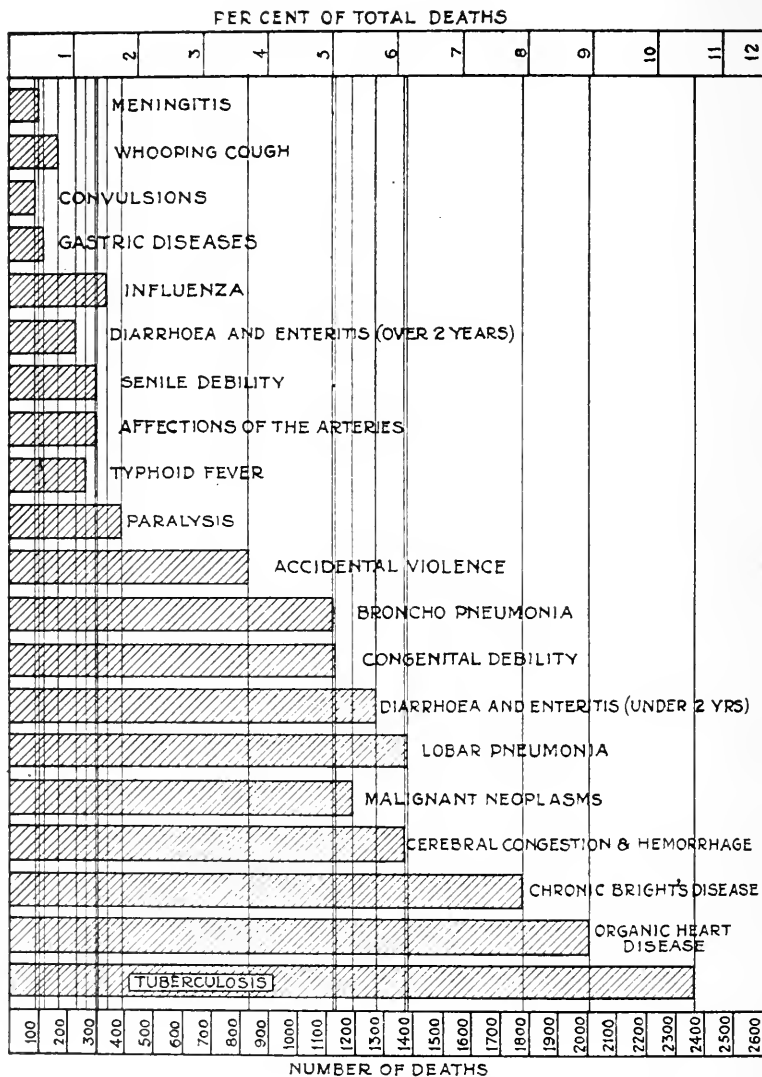


CHART 7 — Twenty Principal Causes of Death in Maryland — 1916.

For the purpose of making special study of tuberculosis Table XXII is inserted, which gives the deaths from tuberculosis by age periods, percentage of deaths in age periods, and percentage per 10,000 of the population living at the various age periods, white and colored. A much higher death rate from tuberculosis in the colored race per 10,000 of the living population is seen throughout. The excess of deaths in the colored population is extremely disproportionate up to the 80th year.

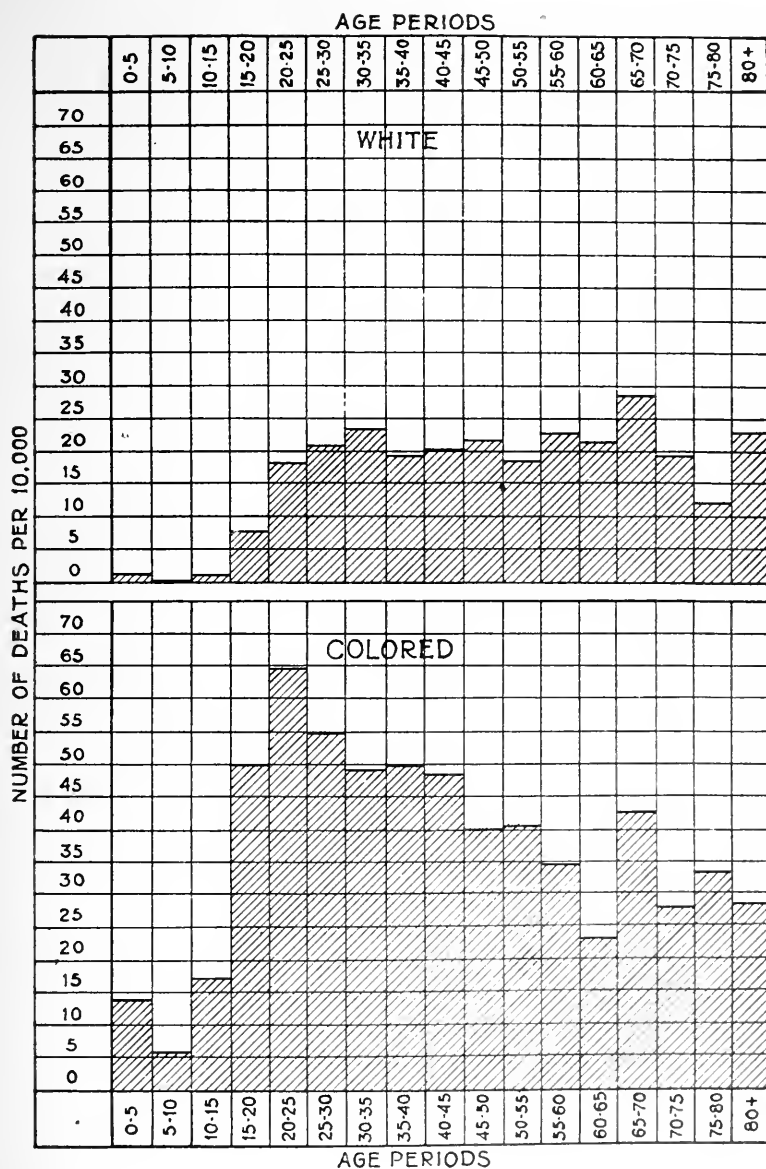
On account of the number of deaths occurring from tuberculosis at early ages, we have always been inclined to feel that tuberculosis is a disease of early adult life but it is evident from this table and the accompanying chart that in the white population at least deaths from tuberculosis are equally prevalent throughout life after the 20th year. The chart for tuberculosis for the colored population is rather irregular but I attribute this to the difficulty in receiving proper returns of ages from this part of our population. Chart 9 which gives the percentage of deaths of total deaths from tuberculosis which occur at various age periods I think, is the ordinary conception which we have had of the distribution of deaths from this cause.

Howard County shows the smallest number of deaths per 10,000 among the white population while Baltimore County shows the highest. This is due to the large number of deaths from tuberculosis at Bay View Asylum. Garrett gives the lowest death rate among the colored population. However, the colored population in this county is so small that the statistics are not of much value when considered separately. The greatest number of deaths among the colored population occurred in Baltimore County.

TABLE XXII.

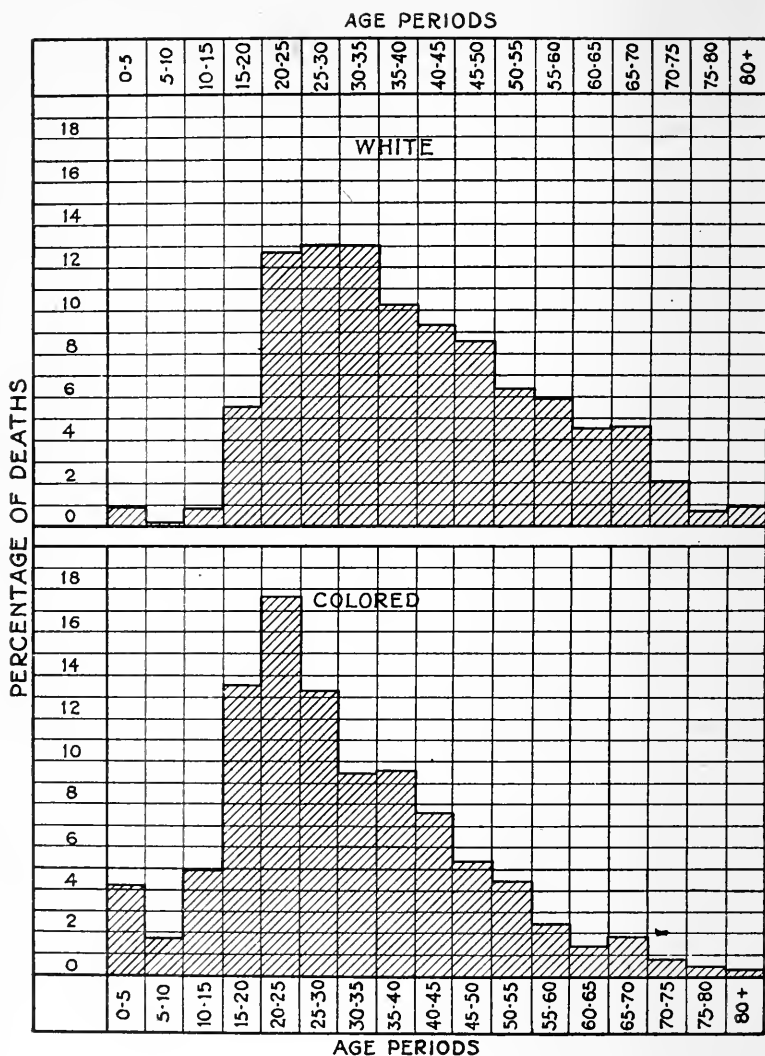
PULMONARY TUBERCULOSIS — 1916 — GIVING DEATHS BY AGES — DEATHS PER 10,000 OF POPULATION AT AGE PERIODS — PER CENT IN EACH AGE PERIOD — WHITE AND COLORED

<i>Ages</i>	<i>White</i>				<i>Colored</i>			
	<i>Deaths</i>	<i>Estimated Population</i>	<i>Deaths Per 10,000</i>	<i>Per Cent of Total Deaths</i>	<i>Deaths</i>	<i>Estimated Population</i>	<i>Deaths Per 10,000</i>	<i>Per Cent of Total Deaths</i>
Under 5 years.....	15	118,853	1.26	0.99	36	25,743	13.98	4.21
5 to 10 years.....	3	114,665	0.26	0.20	15	25,581	5.86	1.76
10 to 15 years.....	12	111,721	1.07	0.79	42	24,380	17.23	4.91
15 to 20 years.....	84	111,382	7.54	5.56	116	23,203	49.99	13.57
20 to 25 years.....	192	106,062	18.10	12.70	151	23,411	64.50	17.66
25 to 30 years.....	198	94,743	20.90	13.09	114	20,917	54.50	13.33
30 to 35 years.....	197	84,329	23.36	13.03	81	16,531	49.00	9.47
35 to 40 years.....	155	80,480	19.26	10.25	82	16,554	49.53	9.59
40 to 45 years.....	141	69,274	20.35	9.32	65	13,483	48.21	7.60
45 to 50 years.....	130	59,992	21.67	8.60	46	11,451	40.17	5.38
50 to 55 years.....	97	52,861	18.35	6.42	38	9,374	40.54	4.45
55 to 60 years.....	89	39,391	22.59	5.89	21	6,095	34.45	2.46
60 to 65 years.....	68	31,694	21.46	4.50	12	5,125	23.41	1.40
65 to 70 years.....	69	24,223	28.49	4.56	16	3,763	42.52	1.87
70 to 75 years.....	31	16,073	19.29	2.05	7	2,517	27.81	0.82
75 to 80 years.....	11	9,169	12.00	0.73	4	1,201	33.31	0.47
80 years and over....	14	6,112	22.91	0.93	3	1,062	28.25	0.35
Unknown	6	906	60.24	0.40	6	485	123.71	0.70
Total.....	1,512	1,131,930	13.35	.....	855	230,876	37.03	.....



TUBERCULOSIS — 1916.

CHART 8 — Comparative Chart Giving Deaths per 10,000 at Various Age Periods, Maryland, White and Colored.



TUBERCULOSIS — 1916.

CHART 9 — Comparative Chart Demonstrating the Percentage of Deaths at Various Age Periods from Tuberculosis — White and Colored — Maryland.

TABLE XXIII.

DEATHS PER 10,000 OF POPULATION FROM PULMONARY TUBERCULOSIS —
WHITE AND COLORED — MARYLAND — 1916.

<i>County</i>	<i>White</i>	<i>Colored</i>	<i>Total</i>
Allegany	7.82	7.05	7.81
Anne Arundel	8.80	35.59	19.24
*Baltimore	20.62	107.29	34.81
Calvert	14.80	32.10	23.10
Caroline	7.52	23.37	11.38
Carroll	9.05	20.71	9.71
Cecil	10.42	19.78	11.64
Charles	9.11	32.92	21.18
Dorchester	13.68	43.70	23.36
†Frederick	32.41	23.93	31.61
Garrett	5.58	0.00	5.55
Harford	9.95	25.81	12.60
Howard	3.24	62.19	15.87
Kent	14.35	52.27	27.20
Montgomery	4.28	24.05	11.78
Prince George's	9.70	33.04	16.22
Queen Anne's	12.48	21.95	15.74
Somerset	10.95	28.60	17.17
St. Mary's	15.64	28.34	20.67
Talbot	8.57	31.52	16.17
Washington	9.30	26.50	9.92
Wicomico	15.42	37.80	20.47
Worcester	11.74	25.27	16.03
Total Counties	15.01	38.83	19.46
Baltimore City	11.27	33.57	14.62
Maryland	13.35	37.03	17.36

* Including 301 non-residents of Baltimore County who died at Tuberculosis Sanatoria.

† Including 106 non-residents of Frederick County who died at Sabillasville.

In Table XXIV the principal diseases are divided according to the percentages occurring in the three periods of life already used, with the exception of senile debility, congenital debility, infantile convulsions, unspecified and ill-defined causes, the three former of which fall by reason of their classification in only one period of life.

Deaths in the middle period of life have an importance from the economic standpoint far greater than those occurring in either extreme. In Chart 10, the principal causes of death are arranged according to their importance as causes of death between the ages of 15 and 45 years, for the State of Maryland.

Tuberculosis of the lungs still easily retains first place on this chart. Accidental violence which ranks tenth in Table XXI comes in second with this arrangement; typhoid fever is third, and Bright's disease fourth. A number of diseases which bear a high ratio to the total number of deaths do not occupy important positions as causes of death in the age periods of 15-45.

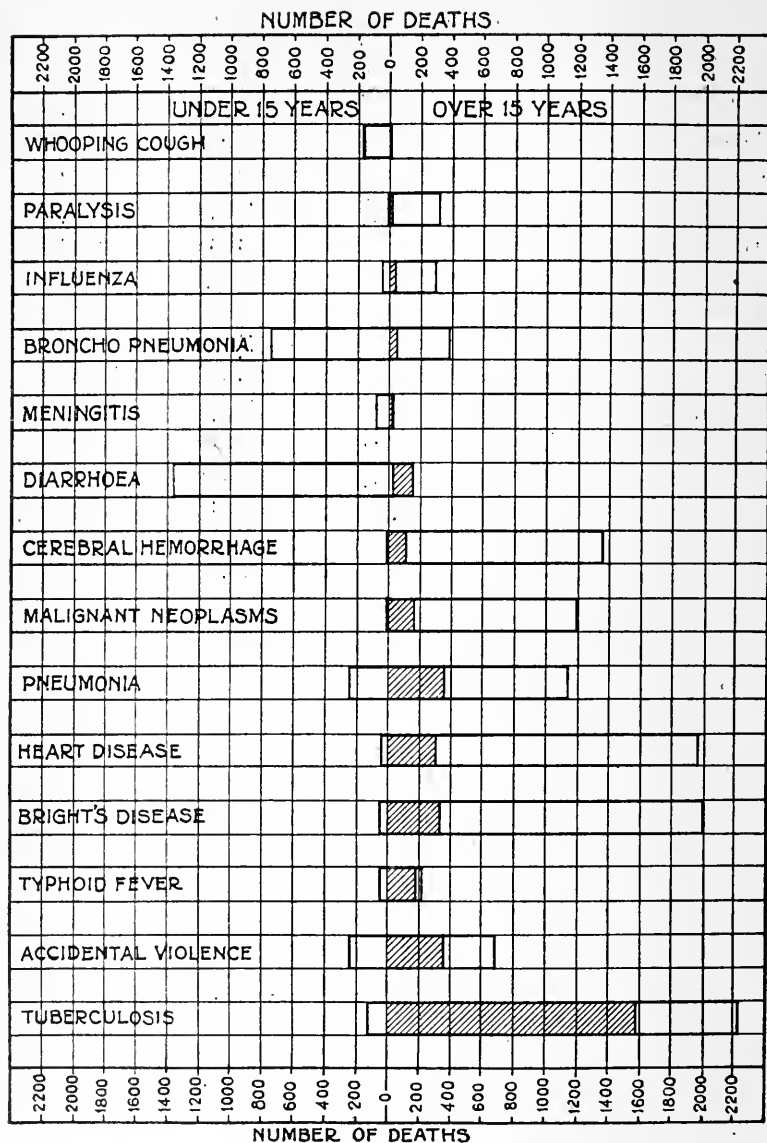


CHART 10 — *Principal Causes of Death, Classified According to Their Importance in the Middle Period of Life — 1916.*

TABLE XXIV.

DEATHS FROM FIFTEEN PRINCIPAL CAUSES IN MARYLAND, 1916, SHOWING
NUMBER AND PERCENTAGE OF DEATHS IN EACH OF THREE AGE PERIODS.

	<i>Rural Maryland</i>		<i>Baltimore City</i>		<i>Maryland</i>	
	<i>No.</i>	<i>Per Cent</i>	<i>No.</i>	<i>Per Cent</i>	<i>No.</i>	<i>Per Cent</i>
TYPHOID FEVER.						
Under 15	38	23.46	14	13.46	52	19.55
15 to 45	104	64.20	75	72.12	179	67.20
45 and over	20	12.35	15	14.42	35	13.16
Age unknown	0	0.00	0	0.00	0	0.00
Total.....	162		104		266	
PARALYSIS.						
Under 15	1	0.35	0	0.00	1	0.31
15 to 45	13	4.51	5	13.89	18	5.56
45 and over	272	94.44	31	86.11	303	93.52
Age unknown	2	0.69	0	0.00	2	0.62
Total.....	288		36		324	
BRIGHT'S DISEASE						
Under 15	31	2.96	20	1.99	51	2.48
15 to 45	126	12.03	204	20.26	330	16.07
45 and over	879	83.95	783	77.76	1,662	80.92
Age unknown	11	1.05	0	0.00	11	0.54
Total.....	1,047		1,007		2,054	
WHOOPING COUGH.						
Under 15	111	99.11	63	100.00	174	99.43
15 to 45	1	0.89	0	0.00	1	0.57
45 and over	0	0.00	0	0.00	0	0.00
Age unknown	0	0.00	0	0.00	0	0.00
Total.....	112		63		175	
HEART DISEASE.						
Under 15	20	1.97	23	2.30	43	2.14
15 to 45	110	10.84	194	19.44	304	15.10
45 and over	880	86.70	781	78.26	1,661	82.51
Age unknown	5	0.49	0	0.00	5	0.25
Total.....	1,015		998		2,013	
MALIGNANT NEOPLASMS.						
Under 15	3	0.50	3	0.51	6	0.50
15 to 45	77	12.77	89	15.01	166	13.88
45 and over	522	86.57	501	84.49	1,023	85.54
Age unknown	1	0.17	0	0.00	1	0.08
Total.....	603		593		1,196	

TABLE XXIV — *Continued.*

	<i>Rural Maryland</i>		<i>Baltimore City</i>		<i>Maryland</i>	
	<i>No.</i>	<i>Per Cent</i>	<i>No.</i>	<i>Per Cent</i>	<i>No.</i>	<i>Per Cent</i>
BRONCHO-						
PNEUMONIA.						
Under 15	341	61.66	409	71.01	750	66.43
15 to 45	21	3.80	31	5.38	52	4.61
45 and over	191	34.54	136	23.61	327	28.96
Age unknown	0	0.00	0	0.00	0	0.00
Total.....	553		576		1,129	
CEREBRAL						
HEMORRHAGE.						
Under 15	3	0.43	8	1.18	11	0.80
15 to 45	30	4.33	81	11.91	111	8.08
45 and over	654	94.37	591	86.91	1,245	90.68
Age unknown	6	0.87	0	0.00	6	0.44
Total.....	693		680		1,373	
DIARRHOEA AND						
ENTERITIS.						
Under 15	743	87.41	618	93.21	1,361	89.95
15 to 45	15	1.76	11	1.66	26	1.72
45 and over	92	10.82	34	5.13	126	8.33
Age unknown	0	0.00	0	0.00	0	0.00
Total.....	850		663		1,513	
INFLUENZA.						
Under 15	35	16.59	13	10.16	48	14.16
15 to 45	20	9.48	21	16.41	41	12.09
45 and over	156	73.93	94	73.44	250	73.75
Age unknown	0	0.00	0	0.00	0	0.00
Total.....	211		128		339	
MENINGITIS.						
Under 15	43	75.44	42	85.71	85	80.19
15 to 45	10	17.54	7	14.29	17	16.04
45 and over	4	7.02	0	0.00	4	3.77
Age unknown	0	0.00	0	0.00	0	0.00
Total.....	57		49		106	
ACCIDENTAL						
VIOLENCE.						
Under 15	152	26.62	90	24.66	242	25.85
15 to 45	235	41.16	120	32.88	355	37.93
45 and over	171	29.95	155	42.47	326	34.83
Age unknown	13	2.28	0	0.00	13	1.39
Total.....	571		365		936	

TABLE XXIV — *Continued.*

	<i>Rural Maryland</i>		<i>Baltimore City</i>		<i>Maryland</i>	
	<i>No.</i>	<i>Per Cent</i>	<i>No.</i>	<i>Per Cent</i>	<i>No.</i>	<i>Per Cent</i>
TUBERCULOSIS						
(LUNGS AND LARYNX).						
Under 15	86	5.71	37	4.29	123	5.20
15 to 45	984	65.38	592	68.68	1,576	66.58
45 and over	423	28.11	233	27.03	656	27.71
Age unknown	12	0.80	0	0.00	12	0.51
Total.....	1,505		862		2,367	
PNEUMONIA.						
Under 15	130	20.80	117	15.29	247	17.77
15 to 45	125	20.00	232	30.35	357	25.68
45 and over	365	58.40	416	54.38	781	56.19
Age unknown	5	0.80	0	0.00	5	0.36
Total.....	625		765		1,390	
OTHER CAUSES.						
Congenital Debility (under 1 year)....	676		456		1,132	
Senile Debility (over 50 years)	221		82		303	
Convulsions of Chil- dren (less than 10 years)	63		30		93	
Unspecified or Ill-De- fined Causes	368		15		383	

The age distribution of the principal causes of death is shown in Charts Nos. 12, 13, 14, and 15. The age distribution of the general mortality is shown in Chart No. 11. These charts illustrate the age distribution of the principal causes of death, with the exception of senile debility, congenital debility and infantile convulsions (whose age distribution is fixed by their classification) and the unclassified diseases. By referring to Chart No. 11, it will be seen that, as has been shown in previous charts, a great portion, 24.79%, of the general mortality occurs under the age of 5. The percentage rapidly declines to the ages between 10 and 15 years, 1.73%, when the lowest actual mortality is reached. The percentage of deaths thereafter remains fairly constant until after the age period 45-50 when it increases. The general percentage ranges below 5% for all periods after the first quinquennium until the age period of 55-60 years. The percentage of death from lobar pneumonia has a distribution corresponding closely to that of the general mortality. If the

pneumonia and broncho-pneumonia curves were combined, the analogy would appear more striking. This fact shows that the term pneumonia as generally employed, is complete, and relates to a number of diseases, mostly infectious, of which pneumonia is the terminal or secondary symptom. Both pneumonia and broncho-pneumonia are important causes of death only at the extremes of life. After the age of 10 years broncho-pneumonia becomes a small factor in the mortality, except for persons over 65, although it will be seen from the chart the largest proportion of deaths from this cause is in the first five years of life. Broncho-pneumonia and whooping cough have an almost wholly infantile distribution. 97.32% of the deaths from whooping cough occur in the first five years of life; 0.89% in the age period of 5-10. 53.60% of all deaths from diphtheria appears in the first quinquennium and 28.80% in the second.

Organic diseases of the heart, malignant neoplasms, cerebral hemorrhage, paralysis and Bright's disease occur almost entirely in the late periods of life. The mortality from cerebral hemorrhage rises above 5% at the 50th year, and increases rapidly thereafter and reaches its maximum between 65 and 70. Malignant neoplasms rise above 5% at from 40 to 45 and reaches its greatest height at 65-70. Bright's disease rises above 5% between 45 and 50; paralysis between 50 and 55 and organic heart disease between 45 and 50.

Tuberculosis—The greatest number of deaths from pulmonary tuberculosis occurs in early adult life. It will be noted in the chart that the percentage remains low to the 15th year when there is a rapid rise, the curve reaching its maximum between 20 and 25 years, declining slowly until it reaches the 75th year.

Typhoid Fever—The greater number of deaths from typhoid fever occur in early adult life. The maximum is reached at 20-25 years.

The causes of accidental violence in infancy are due to the inability of the children to protect themselves and to the carelessness of parents. Burns and scalds account for a large portion of this mortality, and accidental drowning for a further considerable portion. A large number of these deaths are among the children of colored persons and foreigners, and are due, on the one hand, to the carelessness in handling fire, and on the other hand, to the ready access to water afforded by the Maryland coast line and Chesapeake Bay and its tributaries. The percentages are shown in Table XXV.

TABLE XXV.
AGE DISTRIBUTION OF MORTALITY FROM TWELVE DISEASES BY PERCENTAGES, RURAL MARYLAND, 1916.

<i>Causes of Death</i>	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80 years and over	Unknown
Typhoid Fever	3.70	6.79	12.96	15.05	13.58	14.81	8.02	4.32	7.41	4.32	3.09	1.85	0.62	0.62	0.62	0.62	0.62	0.00
Whooping Cough	97.32	0.89	0.89	0.00	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tuberculosis (Tub.)	2.06	0.66	2.99	9.04	14.68	12.43	11.69	9.50	8.04	6.84	5.71	4.32	3.39	4.25	1.70	0.80	1.00	0.80
Pneumonia, Lobar	16.96	2.24	1.60	2.56	4.00	2.24	2.72	4.00	4.48	4.16	6.72	8.16	6.88	7.04	8.00	8.80	8.64	0.80
Broncho-Pneumonia	57.69	3.44	0.54	0.18	0.90	0.18	0.54	1.27	0.72	1.81	1.63	2.53	2.35	5.24	7.96	5.97	7.05	0.00
Organic Heart Disease	0.79	0.39	0.79	1.68	0.79	0.89	1.77	2.66	3.05	5.32	6.01	9.26	11.03	14.09	13.69	13.50	13.79	0.49
Paralysis	0.35	0.00	0.00	0.00	0.00	0.69	1.74	0.69	1.39	1.74	5.21	9.38	12.50	14.93	14.93	17.36	18.40	0.69
Bright's Disease	1.62	0.76	0.57	1.05	1.15	2.20	1.91	2.68	3.06	5.44	6.30	8.31	10.98	12.70	13.37	13.47	13.37	1.05
Accidental Violence	14.01	6.48	6.13	8.41	8.76	6.65	5.08	9.95	6.30	4.73	4.03	3.50	2.28	5.25	3.15	2.28	4.73	2.28
Malignant Neoplasms	0.33	0.16	0.00	0.17	0.50	0.83	1.16	4.48	5.64	8.13	10.28	10.28	12.60	15.92	12.77	10.94	5.64	0.17
Diphtheria	53.60	28.80	8.80	0.80	0.80	2.40	0.80	1.60	0.00	1.60	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerebral Hemorrhage	0.43	0.00	0.00	0.00	0.43	0.14	1.01	0.43	2.31	4.33	8.37	9.67	11.11	15.87	13.28	14.29	17.46	0.87
Deaths, all causes	24.79	1.93	1.73	2.93	3.84	3.48	3.41	3.58	3.71	4.32	4.70	5.30	5.90	7.27	7.26	6.83	8.40	0.61

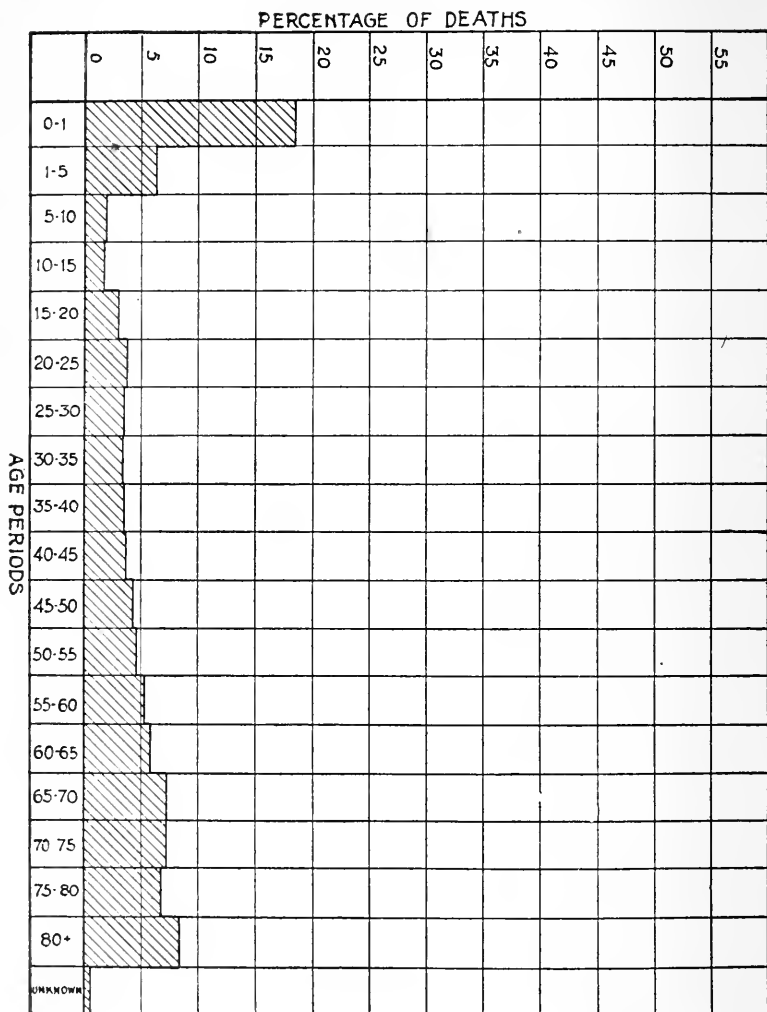


CHART 11 — Age Distribution of General Mortality — 1913.

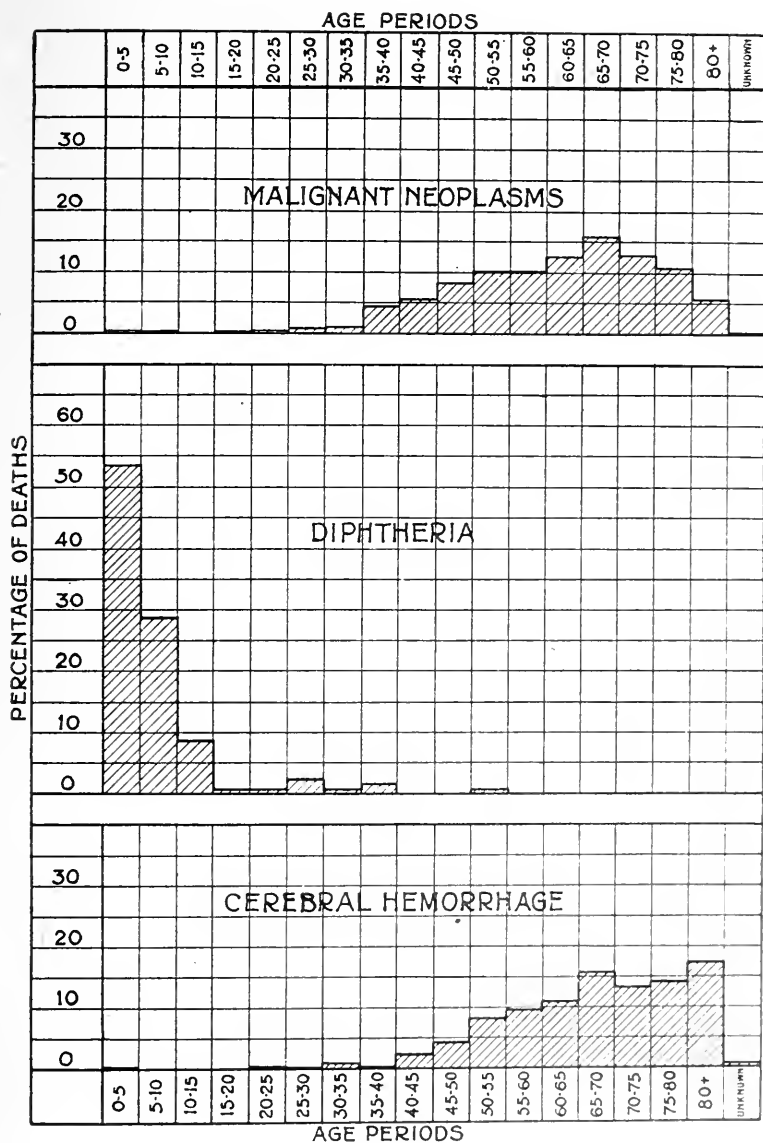
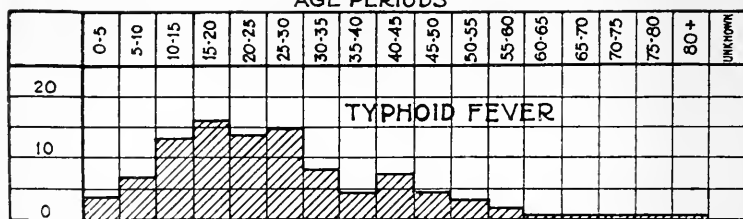
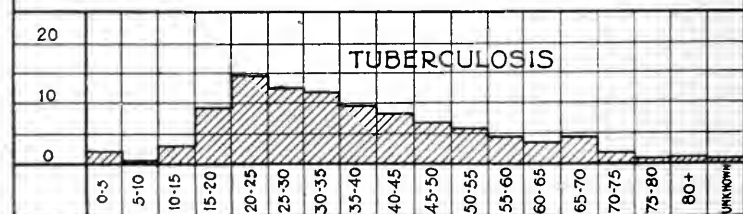
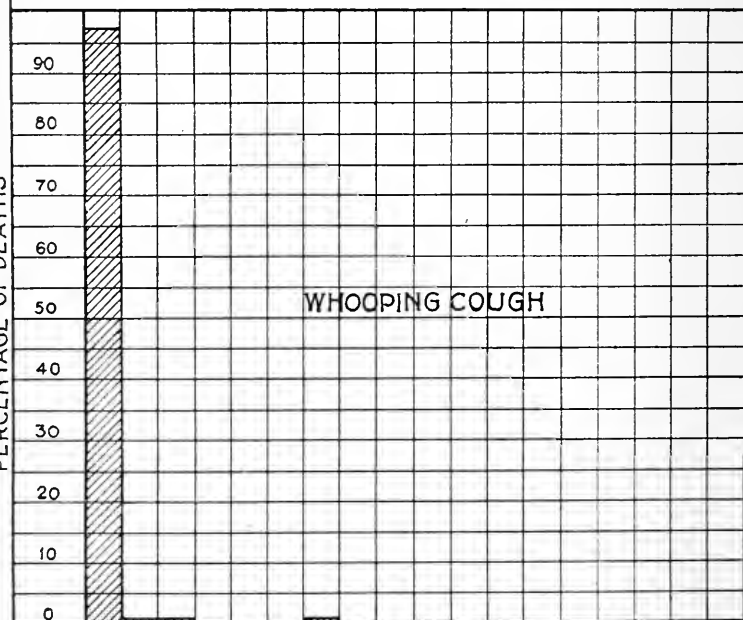


CHART 12 — Age Distribution of Mortality from Twelve Diseases by Percentages, Rural Maryland — 1916.

AGE PERIODS



PERCENTAGE OF DEATHS



AGE PERIODS

CHART 13.

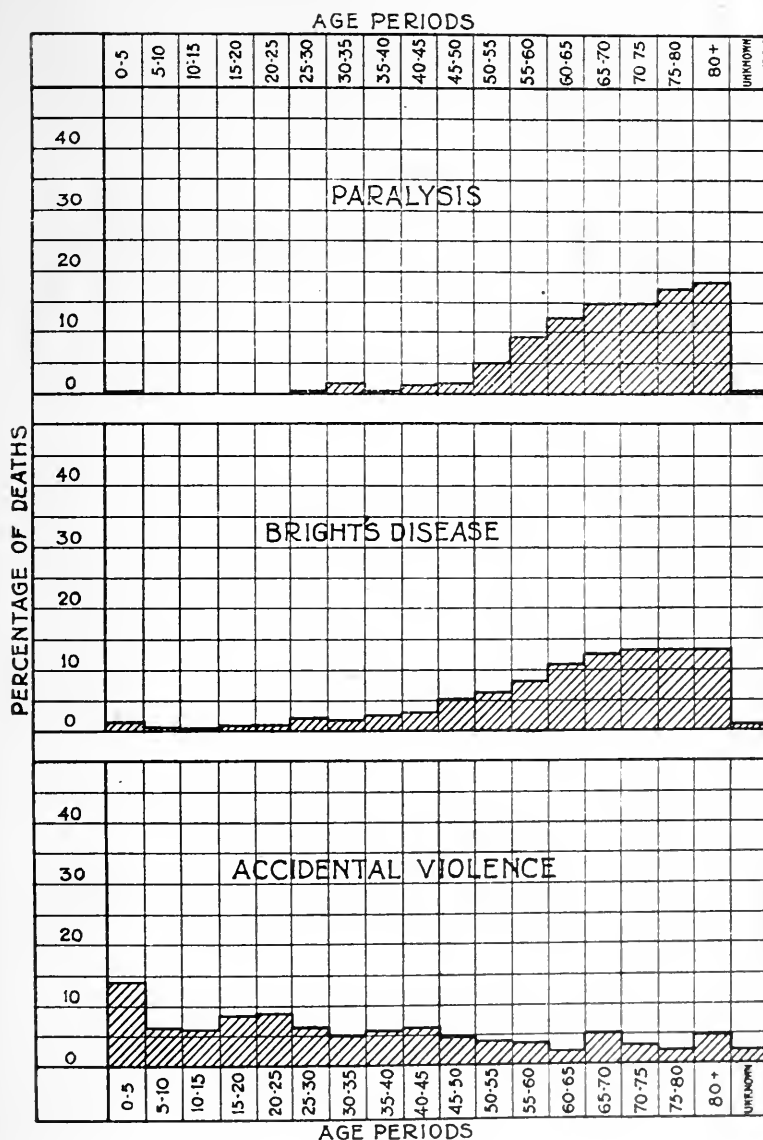


CHART 14 — Age Distribution of Mortality from Twelve Diseases by Percentages, Rural Maryland — 1916.

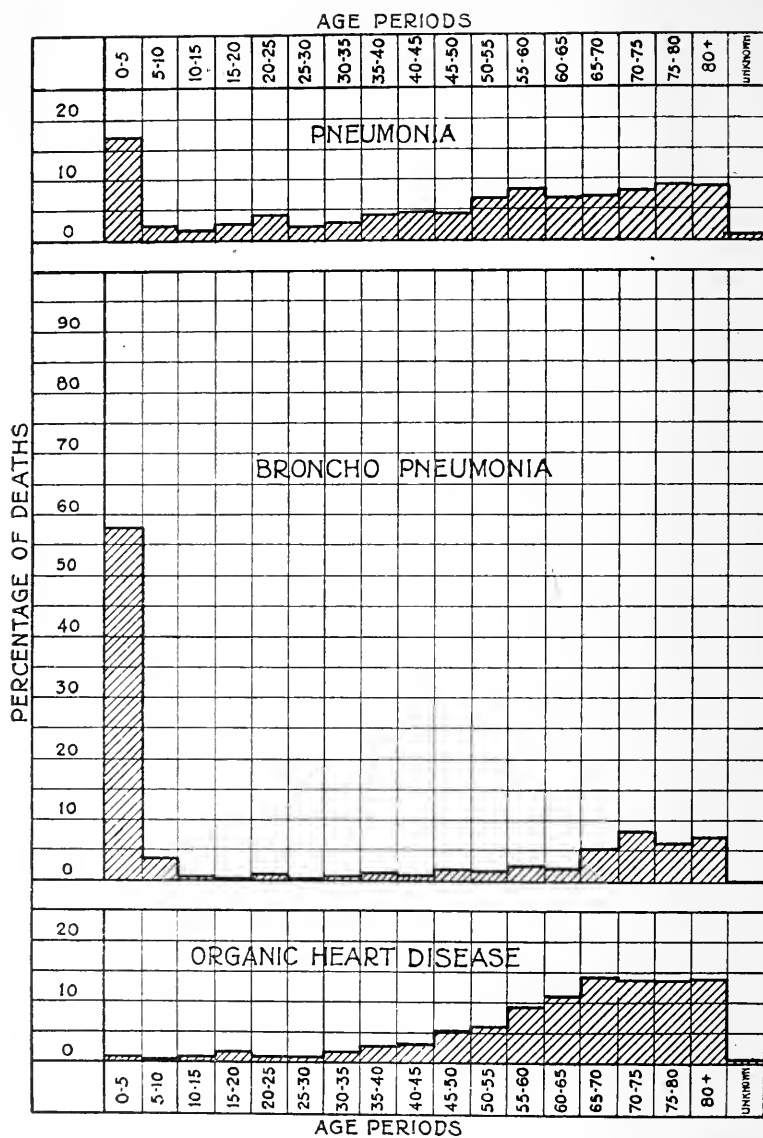


CHART 15.

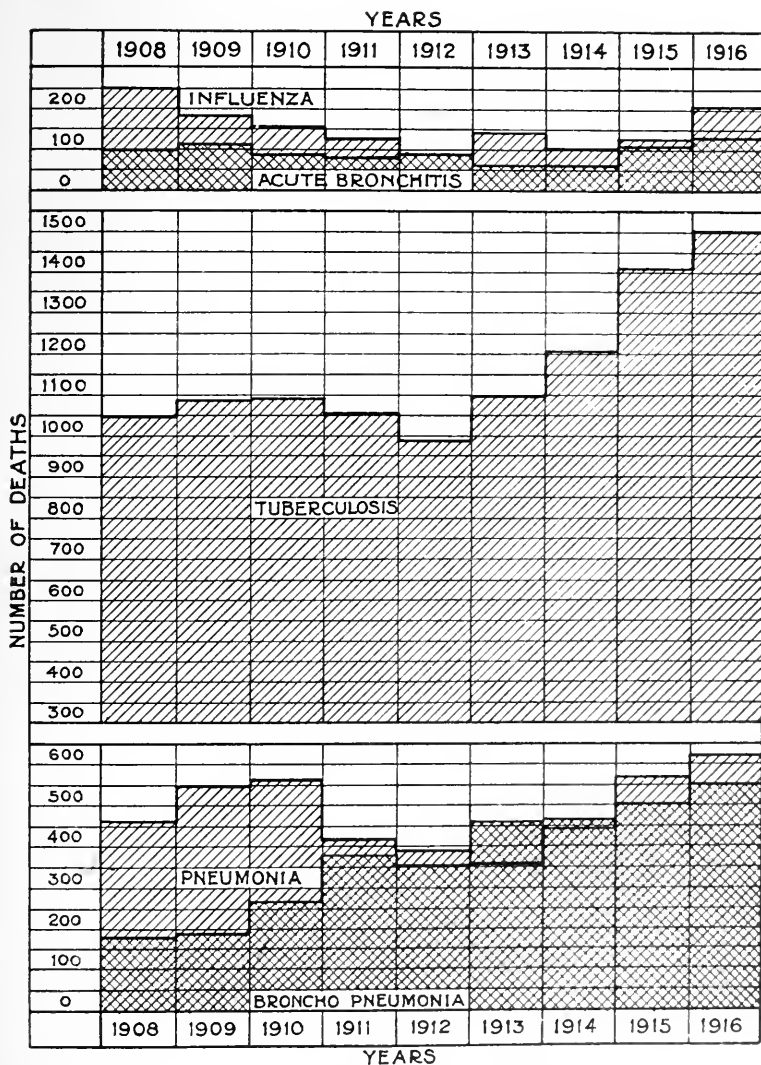


CHART 16 — Mortality from Five Respiratory Diseases — 1908-1916.

Table XXVI gives the deaths from five respiratory diseases in Rural Maryland for the years 1908 to 1916 inclusive. In this table all of the figures show considerable variation except for broncho-pneumonia which has shown an increase. The figures given for pulmonary tuberculosis in Rural Maryland are always too high.

Table XXVII gives the deaths from pulmonary and laryngeal tuberculosis by sex, percentage of the total mortality and the mortality per 10,000 for the years 1909 to 1916 inclusive. In general the tuberculosis rates have shown a gratifying decrease. This decrease was very steady from the year 1909 to the year 1913. In 1914 the mortality rates per 10,000 exceeded those for the three previous years and the rate per 10,000 for the year 1916 still remains higher than the rate for 1912 and 1913. At the foot of the table XXVII average figures for the 8 years are given. It is evident that in Maryland tuberculosis is more prevalent in the male population. The average rate per 10,000 for males is 18.02 and for females, 16.08.

TABLE XXVII.

PULMONARY AND LARYNGEAL TUBERCULOSIS, 1909-1916.

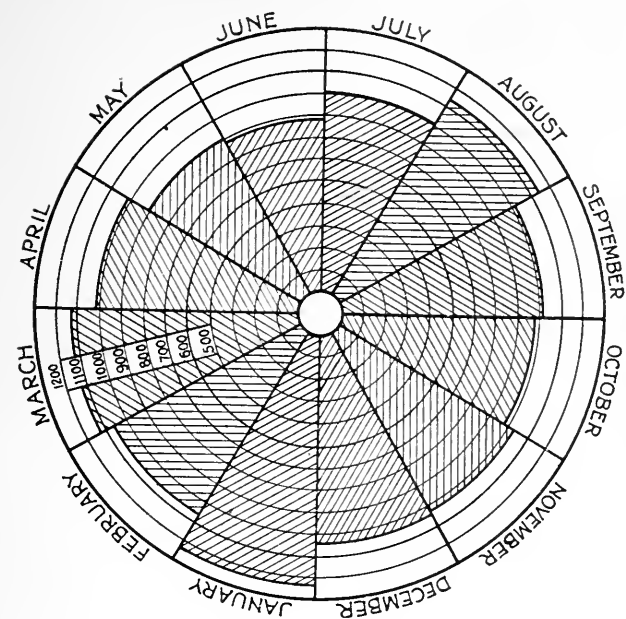
Year	Mortality			Per Cent of Total Mortality	Mortality Per 10,000
	Male	Female	Total		
1909	1,216	1,146	2,362	11.73	18.36
1910	1,192	1,136	2,328	11.10	17.94
1911	1,170	1,053	2,223	10.96	16.99
1912	1,175	1,003	2,178	10.57	16.51
1913	1,037	979	2,016	9.58	15.16
1914	1,274	1,085	2,359	11.03	17.59
1915	1,192	1,041	2,233	10.46	16.52
1916	1,249	1,118	2,367	10.52	17.36
Total.....	9,505	8,561	18,066	.....	.....
Average for 8 years...	1,188	1,070	2,258	.....	.....
Average Population ...	659,296	665,479	1,324,775	.....	.....
Death rate per 10,000..	18.02	16.08	17.04	.....	.....

SEASONAL INCIDENCE OF THE MORTALITY.

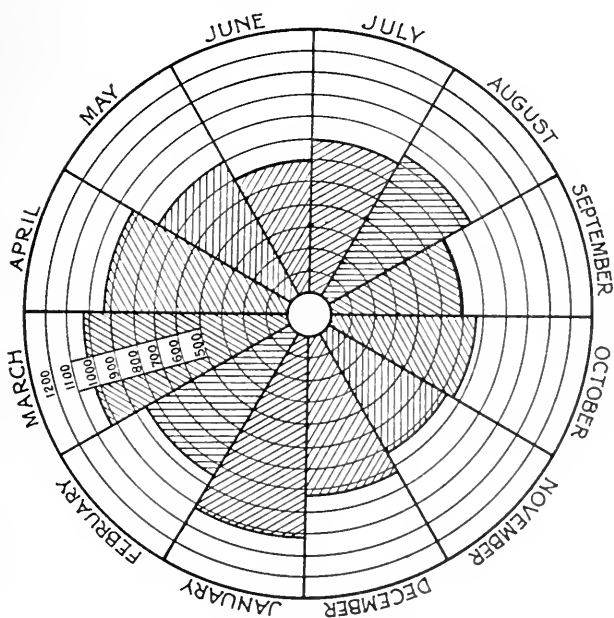
The seasonal incidence of the general mortality is shown separately for Baltimore City and Rural Maryland in Chart No. 17.

It will be seen that the monthly mortality, as shown in the black portion of the charts, is of somewhat oval shape, with the poles lying in the winter and summer months, which are the seasons of greatest mortality. Generally speaking, the mortality may be divided into two classes, diseases of the gastro-intestinal

tract, prevalent in the summer months, and diseases of the respiratory tract, prevalent in winter. The gastro-intestinal diseases reach their altitude in the height of the summer. March is the month of greatest mortality in Rural Maryland and in Baltimore City. June was the month of least mortality in both Rural Maryland and also in Baltimore City. The expansion of the black portion of the chart during July and August is due almost entirely to the acute gastro-intestinal diseases of children. The mortality during the winter months is due mainly to pneumonia and influenza. While the summer mortality affects mainly children, the winter affects both extremes of life (infancy and old age). The sudden rise from the months of low mortality, May and June, to the months of high mortality, July and August, produces a very notable eccentricity in the figures. The circle on the charts indicate the actual number of deaths in the two specified divisions of Maryland. A comparison of this chart with that of the preceding year shows a marked correspondence. The figure of the chart is apparently not subject to many changes, although it may rotate somewhat, either to a later or an earlier season. In the winter months, March furnished the highest mortality. In 1915, March furnished the highest mortality for Rural Maryland and for Baltimore City.



RURAL MARYLAND, 1916.



BALTIMORE CITY, 1916.

CHART 17 — Deaths by Months for 1916.

In the following table the deaths by months for six years, ending 1916 are given for Baltimore City and Rural Maryland (Table XXVIII). From this table it appears that March is the month of greatest mortality in Rural Maryland as well as for Baltimore City. June is the month of least mortality for Rural Maryland and September for Baltimore City.

The seasonal prevalence of eight prominent causes of death are given in the succeeding chart, No. 18.

In considering seasonal prevalence, two classes of disease must be recognized:

(1) Acute fatal diseases, where there is a short interval between commencing sickness and the date of death.

(2) Chronic fatal diseases, where the date of death is separated by a long interval from the date of commencing illness.

The influence of pneumonia and influenza upon the tuberculosis mortality will be seen in a glance at the chart. The chronic degenerative diseases, cerebral apoplexy, heart disease and Bright's disease show little seasonal variation, and are apparently not much dependent upon acute infection. The pneumonia curve and influenza curve always correspond very closely. The gastro-intestinal diseases show a marked antithesis to pneumonia in their seasonal distribution. The mortality from acute gastro-intestinal infections shows the greatest variation of any of these diseases, as already observed. To illustrate the striking influence of pneumonia upon tuberculosis, the curves of these diseases, together with those of acute bronchitis and bronchopneumonia, have all been introduced in Chart No. 18.

TABLE XXVIII.

DEATHS BY MONTHS FOR 1916, 1915, 1914, 1913, 1912 AND 1911.

	<i>Rural Maryland</i>						<i>Baltimore City</i>						<i>Total 6 Years</i>
	1916	1915	1914	1913	1912	1911	1916	1915	1914	1913	1912	1911	
January	1,239	974	928	888	901	902	1,024	849	989	935	996	993	5,786
February	1,068	946	923	876	885	843	859	739	943	914	925	871	5,251
March	1,131	1,192	1,015	991	899	953	1,033	952	1,129	955	1,056	989	6,114
April	1,020	1,172	879	846	790	803	938	899	937	837	869	932	5,412
May	904	952	845	859	744	690	802	764	865	902	780	902	5,015
June	882	809	749	980	678	662	699	633	757	831	701	728	4,349
July	1,010	1,023	880	1,144	862	1,004	800	764	897	946	922	929	5,258
August	1,141	1,067	997	964	964	1,017	847	740	845	792	830	855	4,909
September	1,016	962	885	818	920	848	696	680	771	703	747	752	4,349
October	978	981	881	900	890	713	768	721	736	748	836	798	4,607
November	1,035	869	906	807	817	730	736	755	802	732	850	801	4,676
December	1,048	1,076	944	807	806	721	836	831	880	873	929	854	5,203
Total.....	12,472	12,023	10,832	10,880	10,156	9,886	10,038	9,327	10,551	10,168	10,441	10,404	60,929

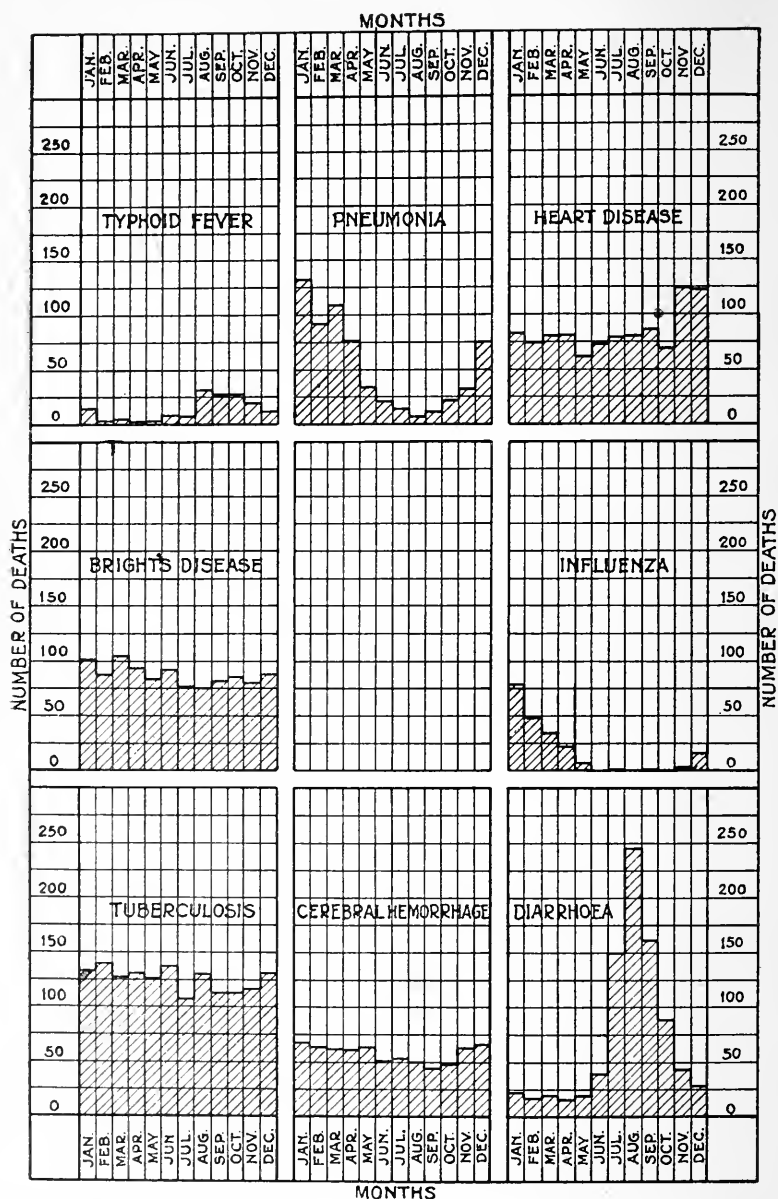


CHART 18 — Eight Prominent Causes of Death by Months — Rural Maryland.

EIGHT PROMINENT CAUSES OF DEATH BY MONTHS — RURAL MARYLAND, 1916.
TYPHOID FEVER.

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
14	3	6		3	9	8	32	27	27	19	12

LOBAR PNEUMONIA.

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
132	92	109	76	33	21	14	7	12	22	32	75

HEART DISEASE.

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
83	74	80	81	62	74	79	80	86	69	124	123

BRIGHT'S DISEASE.

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
101	87	104	93	83	92	76	75	82	86	80	88

INFLUENZA.

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
79	48	34	22	7	..	1	..	1	..	3	16

TUBERCULOSIS (PULMONARY).

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
134	140	127	131	126	137	107	130	113	113	116	131

CEREBRAL HEMORRHAGE.

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
68	64	62	61	63	51	53	50	44	48	63	66

DIARRHOEA.

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
23	17	20	16	20	39	149	245	161	88	44	28

EIGHT PROMINENT CAUSES OF DEATH.

The succeeding table and chart (Table XXIX, Chart 19,) show the comparative susceptibility of the several organs to infection. In general, the table and charts have been arranged so as to show infections of the special organs. The total number of deaths considered in this table is 9,572 or about 42.52% of the total mortality. Certain other important classes of diseases, such as degenerations, congenital diseases and accidents, are not considered in this tabulation.

It will be seen by reference to the table and chart that most of the inflammatory diseases affect the lungs and alimentary canal, infections of the lungs ranking very much higher than those of the other organs.

The special predilection of the tubercle bacillus for the lung has been previously recognized, but the fact that a majority of pathogenic organisms find in the lungs a favorable habitat is not so well recognized. The organisms of the enteric group are, of course, one exception to this rule.

TABLE XXIX.

PARASITIC DISEASES, SHOWING THE ORGAN AFFECTED.

	<i>Rural Maryland</i>	<i>Baltimore City</i>	<i>Mary- land</i>
<i>Respiratory Infections.</i>			
Influenza, laryngeal and pulmonary tuberculosis, bronchitis, broncho-pneumonia, pneumonia, pleurisy, pulmonary gangrene.....	3,121	2,464	5,585
<i>Systemic Infections, Principally Respiratory.</i>			
Measles, scarlet fever, whooping cough, diphtheria	340	157	497
<i>Infections of the Alimentary Tract.</i>			
Typhoid fever, cholera, dysentery, abdominal tuberculosis, gastritis, diarrhœa and enteritis, peritonitis, appendicitis	1,202	940	2,142
<i>Infections of the Urinary Tract.</i>			
Perinephritis, pyonephrosis, pyelitis, cystitis, nephrolithiasis	21	33	54
<i>Systemic Infections, Principally of the Kidneys.</i>			
Acute Nephritis	152	119	271
<i>Infections of the Nervous System.</i>			
Rabies, meningeal tuberculosis, encephalitis, meningitis, tetanus, chorea	128	119	247
<i>Systemic Infections, Not Localized in any Organ or Tissue.</i>			
Pyemia, and septicæmia, general tuberculosis, syphilis	134	121	255
<i>Infections of the Skin.</i>			
Erysipelas, gangrene, abscess and furuncle, dermatitis	83	57	140
<i>Systemic Infections, Principally of the Skin.</i>			
Smallpox .....	...	...	...
<i>Arthritic Infections.</i>			
Acute Rheumatism	24	24	48
<i>Systemic Infections, Principally Arthritic.</i>			
Chronic rheumatism, gout.....	13	10	23
<i>Infections of the Female Organs of Reproduction.</i>			
Endometritis, metritis, salpingitis, puerperal septicæmia	59	61	120
<i>Infections of the Liver.</i>			
Cholangitis, hepatitis, cholelithiasis.....	64	54	118
<i>Infections of the Bones.</i>			
Tuberculosis, osteomyelitis	28	34	62
<i>Infections of the Blood.</i>			
Malaria	8	2	10
Total.....	5,377	4,195	9,572

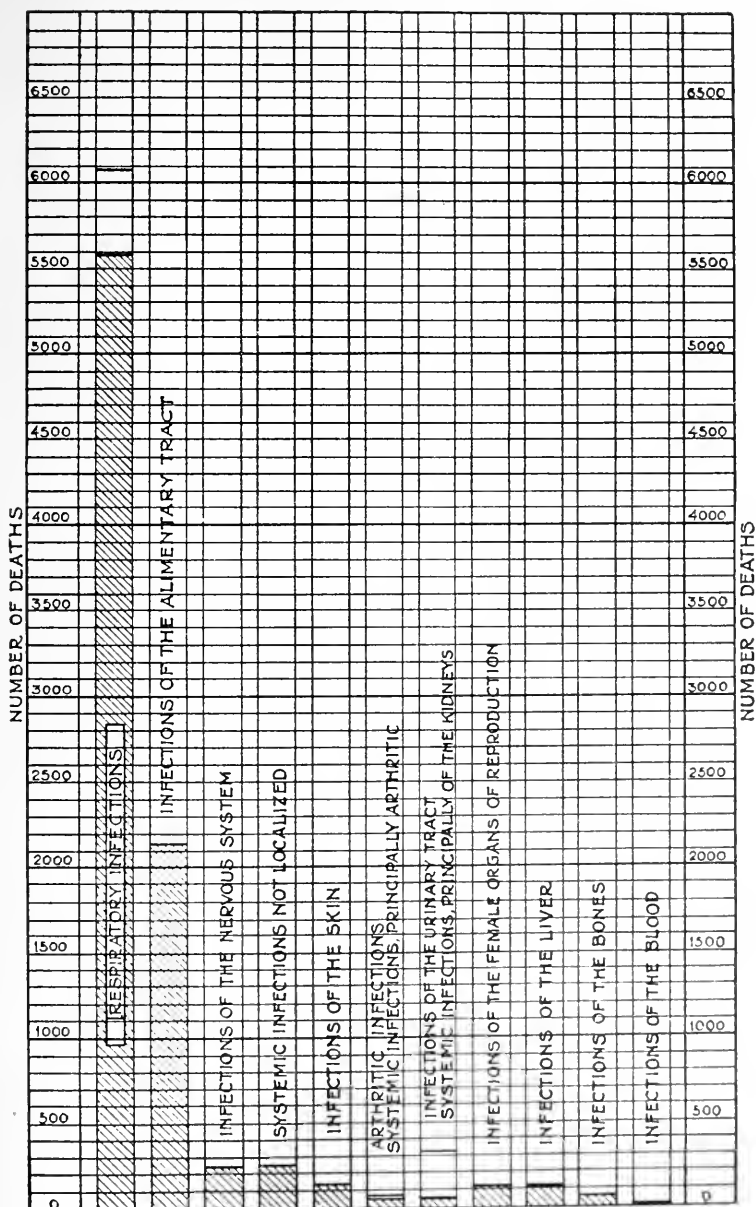


CHART 19 — Comparative Susceptibility of the Several Organs to Parasitic Infections.

SPECIAL CAUSES OF DEATH.

Tables A, B and C, at the end of the report give the causes of death by race, sex, county, age and seasonal distribution for the 189 principal causes of death recognized in the international classification.

Many of the diseases recognized in this classification are only important causes of mortality during epidemics, and are not commonly prevalent in this State. Others are limited to Europe, or other geographic or climatic divisions.

Among the diseases of the International Classification, from which there were no deaths in Maryland during 1916, were typhus fever, relapsing fever, miliary fever, Asiatic cholera, bubonic plague, yellow fever and leprosy.

The following table which is for comparative purposes gives the number of deaths from certain special causes not considered separately in this report, for a period of ten years.

TABLE XXX.
SPECIAL CAUSES OF DEATH.

	SMALLPOX.									
	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	2	5	...	...
Baltimore City.....	3	...	...
Maryland	2	8	...	...

	RABIES.									
	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	1	...	1	...	...	2
Baltimore City.....	...	6	1	1	2	...	...	...	...	...
Maryland	6	1	1	3	...	1	...	...	2

	ALCOHOLISM.									
	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	36	37	44	32	39	49	56	36	46	66
Baltimore City.....	53	46	40	49	46	49	57	55	25	28
Maryland	89	83	84	81	85	98	113	91	71	94

	OCCUPATIONAL POISONINGS.									
	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	1	...	...	...	...	...	...	...	1	4
Baltimore City.....	...	1	1	2	3	...	2	1	3	2
Maryland	1	1	1	2	3	...	2	1	4	6

DISEASES OF THE NERVOUS SYSTEM.

	<i>Encephalitis.</i>									
	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	11	19	7	14	10	18	10	5	14	5
Baltimore City.....	3	6	1	8	2	2	9	6	3	8
Maryland	14	25	8	22	12	20	19	11	17	13

TABLE XXX — *Continued.**Meningitis.*

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	124	117	107	103	88	101	105	73	57	57
Baltimore City.....	161	140	105	121	101	110	88	61	40	49
Maryland	285	257	212	224	189	211	193	134	97	106

Epilepsy.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	35	48	30	33	41	44	56	50	53	50
Baltimore City.....	19	18	15	28	19	15	12	22	14	12
Maryland	54	66	45	61	60	59	68	72	67	62

General Paralysis of the Insane and Other Forms of Mental Alienation.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	104	126	65	99	63	94	89	89	136	79
Baltimore City.....	43	38	28	37	32	21	17	34	21	16
Maryland	147	164	93	136	95	115	106	123	157	95

TETANUS.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	31	19	29	24	22	26	26	21	23	21
Baltimore City.....	21	15	19	16	23	32	16	16	11	8
Maryland	52	34	48	40	45	58	42	37	34	29

INTESTINAL PARASITES.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	4	1	3	5	6	2	7	1	1	4
Baltimore City.....	...	...	...	1	...	...	...	1	...	...
Maryland	4	1	3	6	6	2	7	2	1	4

PREGNANCY.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	81	98	102	106	76	106	113	95	112	110
Baltimore City.....	97	92	103	86	87	105	116	84	79	102
Maryland	178	190	205	192	163	211	229	179	191	212

SUICIDE.

By Poison.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	12	6	14	2	5	8	20	15	14	16
Baltimore City.....	20	28	31	28	37	30	30	63	29	25
Maryland	32	34	45	30	42	38	50	78	43	41

By Asphyxia.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	2	2	2	1	...	4	3	...	4	3
Baltimore City.....	10	17	12	11	18	22	35	33	24	13
Maryland	12	19	14	12	18	26	38	33	28	16

TABLE XXX — *Continued.**By Hanging or Strangulation.*

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	13	10	18	14	12	13	15	15	14	16
Baltimore City.....	13	12	11	5	7	6	14	10	6	16
Maryland	26	22	29	19	19	19	29	25	20	32

By Drowning.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	6	4	6	6	5	10	4	3	9	5
Baltimore City.....	4	4	8	4	2	13	5	3	3	3
Maryland	10	8	14	10	7	23	9	6	12	8

By Firearms.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	22	22	28	20	16	23	39	30	34	44
Baltimore City.....	27	23	30	22	23	21	22	24	31	25
Maryland	49	45	58	42	39	44	61	54	65	69

By Cutting or Piercing Instruments.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	1	3	3	3	2	6	5	4	2	6
Baltimore City.....	3	7	3	5	5	2	8	4	5	3
Maryland	4	10	6	8	7	8	13	8	7	9

By Jumping from High Places.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	...	...	...	...	...	...	1	3	3	1
Baltimore City.....	5	4	6	1	7	2	4	1	3	4
Maryland	5	4	6	1	7	2	5	4	6	5

By Crushing or Other Means.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	2	3	2	1	3	2	1	1	2	4
Baltimore City.....	1	3	...	1	1	2	...	...	...	4
Maryland	3	6	2	2	4	4	1	1	2	8

ACCIDENTAL VIOLENCE.

Poisoning by Food and Other Acute Poisonings.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	18	22	26	29	20	15	21	21	26	18
Baltimore City.....	14	23	12	9	6	13	20	29	13	3
Maryland	32	45	38	38	26	28	41	50	39	21

Burns and Scalds and Burns by Corrosive Substances (Conflagration included from 1910 through 1916).

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	54	68	64	56	50	58	59	69	67	86
Baltimore City.....	81	65	76	86	68	67	69	69	88	63
Maryland	135	133	140	142	118	125	128	138	155	149

TABLE XXX — *Continued.**Absorption of Deleterious Gases (Conflagration included from 1907 through 1909).*

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	5	3	6	13	18	16	19	9	6	16
Baltimore City.....	17	15	12	16	17	14	25	30	10	20
Maryland	22	18	18	29	35	30	44	39	16	36

Accidental Drowning.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	101	107	98	79	95	115	110	105	141	95
Baltimore City.....	54	55	47	49	45	52	58	46	58	59
Maryland	155	162	145	128	140	167	168	151	199	154

**Traumatism by Firearms.*

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	28	21	21	28	30	20	37
Baltimore City.....	7	8	1	3	5	7	7
Maryland	35	29	22	31	35	27	44

**Traumatism by Cutting or Piercing Instruments.*

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	10	4	3	6	3	2	0
Baltimore City.....	3	1	...	...	2	2	1
Maryland	13	5	3	6	5	4	1

**Traumatism by Fall.*

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	22	44	53	66	52	76	91
Baltimore City.....	80	91	94	86	100	91	111
Maryland	102	135	147	152	152	167	202

**Traumatism in Mines and Quarries.*

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	8	10	12	11	25	7	33
Baltimore City.....	1	...	1	...	...	1	...
Maryland	9	10	13	11	25	8	33

**Traumatism by Machines.*

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	4	6	7	7	11	10	7
Baltimore City.....	15	9	15	14	6	10	21
Maryland	19	15	22	21	17	20	28

**Traumatism by Crushing (Vehicles, Railroads, Landslides).*

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	113	132	155	150	172	146	188
Baltimore City.....	93	74	64	96	108	109	80
Maryland	206	206	219	246	280	255	268

TABLE XXX — *Continued.***Electrical Shock (Lightning Excepted).*

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	3	4	6	11	4	4	2
Baltimore City.....	9	1	6	3	1	1	5
Maryland	12	5	12	14	5	5	7

Lightning.

	1910	1911	1912	1913	1914	1915	1916
Rural Maryland.....	2	4	7	9	6	9	5
Baltimore City.....	...	3	...	...	...	...	...
Maryland	2	7	7	9	6	9	5

DROWNING.

Accidental and Suicidal.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	107	111	104	85	100	125	114	108	150	100
Baltimore City.....	58	59	55	53	47	55	63	49	61	62
Maryland	165	170	159	138	147	180	177	157	211	162

UNSPECIFIED OR ILL-DEFINED CAUSES.

Ill-Defined Organic Causes.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	27	30	36	22	5	4	1	1	5	1
Baltimore City.....	4	9	7	5	6	4	2	...	1	...
Maryland	31	39	43	27	11	8	3	1	6	1

Sudden Death.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	25	27	44	19	26	31	24	25	25	54
Baltimore City.....	...	...	...	...	...	1	...	...	2	...
Maryland	25	27	44	19	26	32	24	25	27	54

Unspecified Causes.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Rural Maryland....	503	421	347	437	367	220	208	283	325	313
Baltimore City.....	295	308	326	313	226	85	45	10	25	15
Maryland	798	729	673	750	593	305	253	293	350	328

* Classified under one title "Other Accidental Traumatisms," during the years 1907, 1908 and 1909.

Table XXX permits of rapid comparative observation for a period of ten years, both for Rural Maryland and the City of Baltimore.

During the year 1916 there were no deaths from smallpox in Rural Maryland and Baltimore City. Except for the year 1913 in which there were 2 deaths from this cause and 1914 in which there were eight deaths, not a single death from smallpox has been recorded for a period of 6 years.

There were 94 deaths from alcoholism in 1916, an increase of 23 over the previous year.

There were 29 deaths from tetanus, a decrease of 5 over the preceding year. This is the lowest number of deaths from this cause in ten years. The majority of deaths from tetanus are in infants, and are due to infection of the umbilicus, the larger proportion occurring in the practice of midwives.

There were 188 deaths by suicide in the State in the last year. Of these, 41 were by poison, 16 by asphyxia, 32 by hanging and 69 by firearms. The greater number of suicides by poison and asphyxia occurred in Baltimore City, while the majority by firearms occurred in Rural Maryland. The total suicides in Rural Maryland were 95 and for Baltimore City, 93.

Burns, scalds, etc., caused 149 deaths in 1916. Most of these deaths occurred in children and were due to clothes catching fire from stoves, open fire-places or bonfires.

Accidental Drowning—154 deaths were reported from this cause during 1916. As usual, a majority of these deaths, 95, were reported from Rural Maryland while approximately one-third, 59, were reported from Baltimore City.

Traumatism by crushing (vehicles, railroads, landslides, etc.)—The number of deaths from this cause was 268 and has been on the increase for a number of years. The majority of these accidents occur on railroads.

Lightning—There were 5 deaths from this cause during 1916, all in Rural Maryland.

The deaths from poisoning by food and other acute poisoning (not homicidal or suicidal) were 21; 18 in Rural Maryland and 3 in Baltimore City.

INFANT MORTALITY.

With a total number of 33,675 living births and a birth rate of 24.71 per thousand for Maryland, we feel as if we have a proper basis to compute a correct infant mortality rate.

Table XXXI gives the infant mortality rate, white and colored for Rural Maryland, Baltimore City, and total Maryland for the year 1916. Birth registration in Maryland is now practically complete and these rates for ordinary purposes are considered correct. The mortality rate per 1,000 of living births for Baltimore City in the white population is 103.22 and in Rural Maryland is 97.73, while the rate in the colored population in Baltimore City is 221.98 and in Rural Maryland, 204.22. The total rate for Rural Maryland is slightly less than that for Baltimore City.

TABLE XXXI.

INFANT MORTALITY RATE — 1916 — WHITE AND COLORED, MARYLAND.

	<i>Rural Maryland</i>		<i>Baltimore City</i>		<i>Maryland</i>	
	<i>Total</i>	<i>Mortality</i>	<i>Total</i>	<i>Mortality</i>	<i>Total</i>	<i>Mortality</i>
	<i>Deaths</i>	<i>Per 1,000</i>	<i>Deaths</i>	<i>Per 1,000</i>	<i>Deaths</i>	<i>Per 1,000</i>
	<i>Under</i>	<i>Living</i>	<i>Under</i>	<i>Living</i>	<i>Under</i>	<i>Living</i>
	<i>1 Year</i>	<i>Births</i>	<i>1 Year</i>	<i>Births</i>	<i>1 Year</i>	<i>Births</i>
White	1,470	97.73	1,269	103.22	2,739	100.20
Colored	832	204.22	503	221.98	1,335	210.57
Total	2,302	120.43	1,772	121.70	4,074	120.98

DURATION OF LIFE.

The main purpose of sanitary organization is to increase the duration of life. The duration of life is usually shown by tables of the mean duration and expectancy of life at given ages. Such tables were considered by Dr. Farr to represent the health and prosperity of the country, and to furnish a fair estimate of its living capital. Dr. Farr considered a table constructed in this way to be a measure of the life of the community, and hence was called by him a biometer.

Other tables, popularly used by insurance companies, are tables of survivorship and tables showing the probability of living for a stated period beyond a given age—the probability of living one year being generally employed in the construction of this class of tables. Tables of duration of life are open to some objections for sanitary purposes. The extremes of either great or brief duration of life are largely lost, and certain components of the curve, which are of great sanitary importance, are not apparent.

Tables of duration of life are prognostic, the conditions of life in any given year being assumed to remain constant during a future period of years, i. e., 100 or 50 years. The particular question which interests the sanitarian is, at what period of life does the avoidable mortality occur. His problem is directed in general to increasing the duration of life, and the results of the work will be shown by fewer deaths in the early periods of life. The survivors, dying later, must, in proportion to their number, increase the number of deaths at an advanced age. Such tables and charts should illustrate, in the population of the State, under sanitary conditions present in the year of calculation, the number of the population living and the number dead at succeeding age periods.

The "Average of Death" may be considered in connection with the duration of life. This measurement is determined by adding the ages of the decedents, and dividing them by the number of decedents. The fallacy that an increase in the average age at death indicates a corresponding increase in the duration of life must be avoided. It is evident that in communities, made up of young adults and children, the average age at death will be low, while later, as the older portion of the population becomes numerous, the average age at death will be high, though there may have been no change in the death rate.

In 1916, there were 22,510 deaths in Maryland. Of these, 22,434 occurred at known ages. Taking the sum of these ages, the 22,434 persons were found to have lived 904,973.133 years, giving an average age at death of 40.339 years. This number should be identical with the duration of life in a fixed population, therefore, the term "presumptive duration of life" may be applied to this factor in the succeeding table. The table of presumptive duration and presumptive expectancy is constructed as follows:

If we tabulate the decedents dying over the age of one year during 1916, we find 18,424 persons to have died, after living a total of 903,950.424 years, giving an average age at death of 49.064 years. This figure is entered in the table, under the heading "Presumptive Duration—Years." Since this figure includes one year which has already been lived, the expectation of those decedent over one year will be, at the age of one year, 48.064 years. This factor appears in the table under the heading "Presumptive Expectancy at Age."

The factors of this calculation are shown in the first two columns of Table XXXII-A, while in the last two columns headed respectively "Presumptive Duration—Years" and "Presump-

tive Expectancy at Age," are given the presumptive expectation and duration of life by one-year periods.

To determine the total years lived by any number of decedents, it is necessary to add the ages of all the decedents and divide the sum of years by the number of decedents. This method involves considerable labor, and vital statisticians generally use the median age between the two periods, multiplied by the number of decedents during the period.

By the aid of the Hollerith tabulating machine it has been possible for us to use the exact age of each individual of the 22,434 decedents of known ages in Maryland and secure a very accurate result. The ages being returned by years and months, the months are entered as decimal fractions of a year.

All registrations in which the number of days of the age of the decedent was given were tabulated with an additional month if over fifteen days, and the additional days dropped, if under fifteen days.

Thus the maximum error of any individual entry was only 0.0416 years. In any large series of entries the error should not exceed 0.001.

The following decimals were used for months, each being carried to the third place—one month, .083; two months, .166; three months, .249; four months, .333; five months, .416; six months, .499; seven months, .583; eight months, .686; nine months, .749; ten months, .833; eleven months, .916; twelve months, 1.000.

By reference to Table XXXII-A it will be seen that the presumptive duration of life steadily increases from the second year upwards, and the presumptive expectancy steadily diminishes.

The presumptive expectancy of life is greatest at 2 years, being greater than at birth (49.332, as compared with 48.064). At birth the expectancy and duration of life are identical, but after birth the expectancy increases to the second year, and thereafter steadily decreases, although the expectancy remains above that at birth up to the fifth year.

While the table of presumptive expectation and duration of life is not to be relied upon as an accurate measure of real expectation of life, such as is furnished by actuarial tables, its simplicity of construction and value for purposes of comparison give it a place in all our reports on vital statistics.

The figures over the age of 80 years are only included in this table for the interest they may possess, as they have no value for

comparison, owing to the small number of entries and the great annual fluctuation in deaths over 80.

Table XXXII-B and XXXII-C are introduced in this report. Table XXXII-B gives the presumptive expectancy and duration of life worked on the total white deaths in Maryland during 1916, and Table XXXII-C gives the presumptive expectancy and duration of life worked on the colored deaths in Maryland for the same year.

The presumptive expectation of life in the white population exceeds that of the colored population at the second year by 11.649 years, at the 20th year it was 9.323 years greater, at the 30th year 6.963 years greater, at the 40th year it was 5.258 years greater, at the 50th year it was 3.121 years greater, at the 60th year it was only 1.111 years greater and at the 70th year the expectation of life in the colored population exceeds that of the white by 0.563 years.

TABLE XXXII-A.

PRESUMPTIVE EXPECTANCY AND DURATION OF LIFE — MARYLAND — 1916.

<i>Deaths Over the Age of</i>	<i>Number</i>	<i>Total Years Lived</i>	<i>Presumptive Duration Years</i>	<i>Presumptive Expectancy at Age</i>
1 year	18,424	903,950.424	49.064	48.064
2 years	17,588	902,823.389	51.332	49.332
3 years	17,253	902,035.067	52.283	49.283
4 years	17,059	901,387.857	52.839	48.839
5 years	16,928	900,813.038	53.214	48.214
6 years	16,823	900,243.347	53.513	47.513
7 years	16,728	899,636.899	53.780	46.780
8 years	16,637	898,963.248	54.034	46.034
9 years	16,561	898,324.879	54.243	45.243
10 years	16,494	897,695.835	54.426	44.426
11 years	16,425	896,975.291	54.610	43.610
12 years	16,381	896,474.356	54.726	42.726
13 years	16,312	895,619.498	54.906	41.906
14 years	16,244	894,710.883	55.079	41.079
15 years	16,164	893,559.693	55.281	40.281
16 years	16,091	892,438.063	55.462	39.462
17 years	15,991	890,802.782	55.707	38.707
18 years	15,869	888,683.861	56.001	38.001
19 years	15,722	885,989.952	56.354	37.354
20 years	15,568	883,015.476	56.720	36.720
21 years	15,430	880,206.818	57.045	36.045
22 years	15,268	876,749.334	57.424	35.424
23 years	15,089	872,753.612	57.840	34.840
24 years	14,920	868,816.127	58.232	34.232
25 years	14,751	864,709.516	58.620	33.620
26 years	14,602	860,936.290	58.960	32.960
27 years	14,428	856,360.245	59.354	32.354
28 years	14,256	851,655.969	59.740	31.740
29 years	14,082	846,739.224	60.122	31.122
30 years	13,924	842,115.189	60.479	30.479
31 years	13,712	835,698.719	60.947	29.947
32 years	13,582	831,622.968	61.230	29.230
33 years	13,400	825,750.316	61.623	28.623
34 years	13,239	820,392.379	61.968	27.968
35 years	13,076	814,797.224	62.312	27.312
36 years	12,874	807,678.192	62.737	26.737
37 years	12,695	801,187.679	63.110	26.110
38 years	12,557	796,037.576	63.394	25.394
39 years	12,365	788,686.865	63.784	24.784
40 years	12,167	780,906.243	64.182	24.182
41 years	11,936	771,611.217	64.646	23.646
42 years	11,757	764,222.960	65.002	23.002
43 years	11,551	755,522.056	65.408	22.408
44 years	11,340	746,385.077	65.819	21.819
45 years	11,147	737,834.095	66.191	21.191
46 years	10,861	724,891.164	66.743	20.743
47 years	10,661	715,628.852	67.126	20.126
48 years	10,457	705,975.904	67.464	19.464
49 years	10,223	694,678.853	67.953	18.953
50 years	10,002	683,784.654	68.365	18.365
51 years	9,698	668,523.705	68.934	17.934
52 years	9,497	658,213.714	69.837	17.837
53 years	9,247	645,143.686	69.768	16.768
54 years	9,006	632,284.409	70.207	16.207

TABLE XXXII-A — *Continued.*

<i>Deaths Over the Age of</i>	<i>Number</i>	<i>Total Years Lived</i>	<i>Presumptive Duration Years</i>	<i>Presumptive Expectancy at Age</i>
55 years	8,772	619,577.667	70.631	15.631
56 years	8,481	603,491.405	71.158	15.158
57 years	8,219	588,741.908	71.632	14.632
58 years	7,981	575,099.165	72.050	14.050
59 years	7,713	559,473.230	72.536	13.536
60 years	7,465	544,762.484	72.976	12.976
61 years	7,123	524,169.646	73.588	12.588
62 years	6,877	509,082.845	74.027	12.027
63 years	6,611	492,499.623	74.497	11.497
64 years	6,317	473,882.926	75.017	11.017
65 years	6,063	457,541.157	75.452	10.452
66 years	5,724	435,416.655	76.069	10.069
67 years	5,434	416,189.738	76.590	9.590
68 years	5,112	394,490.710	77.170	9.170
69 years	4,791	372,559.766	77.762	8.762
70 years	4,518	353,619.244	78.269	8.269
71 years	4,142	327,205.800	78.997	7.997
72 years	3,854	306,652.969	79.567	7.567
73 years	3,550	284,658.540	80.186	7.186
74 years	3,260	263,382.903	80.792	6.792
75 years	2,989	243,230.520	81.375	6.375
76 years	2,635	216,572.604	82.191	6.191
77 years	2,317	192,309.396	82.999	5.999
78 years	2,061	172,503.111	83.699	5.699
79 years	1,828	154,251.171	84.382	5.382
80 years	1,611	137,032.974	85.061	5.061
81 years	1,363	117,120.142	85.928	4.928
82 years	1,173	101,655.291	86.663	4.663
83 years	983	86,012.408	87.500	4.500
84 years	836	73,763.313	88.234	4.234
85 years	679	60,522.245	89.134	4.134
86 years	550	49,520.094	90.037	4.037
87 years	429	39,081.066	91.098	4.098
88 years	352	32,356.104	91.921	3.921
89 years	274	25,463.559	92.933	3.933
90 years	227	21,262.104	93.666	3.666
91 years	170	16,121.267	94.831	3.831
92 years	142	13,565.029	95.528	3.528
93 years	105	10,147.753	96.645	3.645
94 years	81	7,909.575	97.649	3.649
95 years	69	6,777.124	98.219	3.219
96 years	51	5,062.860	99.272	3.272
97 years	35	3,522.513	100.643	3.643
98 years	25	2,550.912	102.036	4.036
99 years	22	2,256.329	102.560	3.560
100 years	19	1,957.747	103.039	3.039
102 years	12	1,257.581	104.798	2.798
103 years	10	1,053.581	105.358	2.358
104 years	8	847.581	105.948	1.948
105 years	6	639.332	106.555	1.555
106 years	4	429.000	107.250	1.250
107 years	3	323.000	107.667	0.667
108 years	2	216.000	108.000	0.000
Total	22,434	904,973.133	40.339	.....

TABLE XXXII-B.

PRESUMPTIVE EXPECTANCY AND DURATION OF LIFE — WHITE — 1916.

<i>Deaths Over the Age of</i>	<i>Number</i>	<i>Total Years Lived</i>	<i>Presumptive Duration Years</i>	<i>Presumptive Expectancy at Age</i>
1 year	13,845	721,484.405	52.112	51.112
2 years	13,306	720,755.047	54.168	52.168
3 years	13,110	720,294.182	54.897	51.897
4 years	12,981	719,861.279	55.455	51.455
5 years	12,891	719,468.231	55.812	50.812
6 years	12,809	719,024.820	56.134	50.134
7 years	12,752	718,656.897	56.356	49.356
8 years	12,683	718,145.524	56.623	48.623
9 years	12,632	717,715.497	56.817	47.817
10 years	12,583	717,254.839	57.002	47.002
11 years	12,539	716,794.718	57.165	46.165
12 years	12,512	716,486.109	57.264	45.264
13 years	12,467	715,926.386	57.426	44.426
14 years	12,428	715,402.763	57.567	43.567
15 years	12,389	714,839.740	57.700	42.700
16 years	12,346	714,177.117	57.842	41.842
17 years	12,293	713,309.421	58.026	41.026
18 years	12,222	712,075.517	58.262	40.262
19 years	12,139	710,551.105	58.535	39.535
20 years	12,049	708,809.278	58.827	38.827
21 years	11,967	707,134.621	59.090	38.090
22 years	11,882	705,312.964	59.360	37.360
23 years	11,778	702,986.756	59.686	36.686
24 years	11,680	700,699.811	59.991	35.991
25 years	11,576	698,164.892	60.311	35.311
26 years	11,480	695,729.291	60.604	34.604
27 years	11,372	692,884.991	60.929	33.929
28 years	11,261	689,842.887	61.259	33.259
29 years	11,146	686,584.693	61.599	32.599
30 years	11,035	683,332.101	61.924	31.924
31 years	10,902	679,300.025	62.310	31.310
32 years	10,808	676,345.974	62.578	30.578
33 years	10,688	672,468.013	62.918	29.918
34 years	10,582	668,935.270	63.214	29.214
35 years	10,458	664,676.578	63.557	28.557
36 years	10,334	660,298.821	63.896	27.896
37 years	10,211	655,832.106	64.228	27.228
38 years	10,115	652,243.116	64.483	26.483
39 years	9,980	647,067.493	64.836	25.836
40 years	9,845	641,754.460	65.186	25.186
41 years	9,689	635,467.361	65.586	24.586
42 years	9,569	630,507.360	65.891	23.891
43 years	9,436	624,882.814	66.223	23.223
44 years	9,291	618,594.300	66.580	22.580
45 years	9,160	612,779.807	66.897	21.897
46 years	8,974	604,350.127	67.345	21.345
47 years	8,823	597,348.764	67.704	20.704
48 years	8,659	589,582.534	68.089	20.089
49 years	8,474	580,645.325	68.521	19.521
50 years	8,313	572,697.451	68.892	18.892
51 years	8,107	562,343.988	69.365	18.365
52 years	7,959	554,743.693	69.700	17.700
53 years	7,772	544,957.550	70.118	17.118
54 years	7,584	534,916.235	70.532	16.532

TABLE XXXII-B — *Continued.*

<i>Deaths Over the Age of</i>	<i>Number</i>	<i>Total Years Lived</i>	<i>Presumptive Duration Years</i>	<i>Presumptive Expectancy at Age</i>
55 years	7,404	525,132.233	70.925	15.925
56 years	7,196	513,624.536	71.376	15.376
57 years	6,986	501,795.254	71.829	14.829
58 years	6,791	490,608.777	72.244	14.244
59 years	6,570	477,713.168	72.711	13.711
60 years	6,366	465,603.954	73.139	13.139
61 years	6,129	451,316.026	73.636	12.636
62 years	5,925	438,797.218	74.059	12.059
63 years	5,704	425,009.280	74.511	11.511
64 years	5,458	409,420.553	75.013	11.013
65 years	5,244	395,644.964	75.447	10.447
66 years	4,984	378,665.529	75.976	9.976
67 years	4,732	361,954.790	76.491	9.491
68 years	4,447	342,744.500	77.073	9.073
69 years	4,165	323,468.384	77.663	8.663
70 years	3,914	306,049.978	78.194	8.194
71 years	3,619	285,310.039	78.837	7.837
72 years	3,368	267,389.815	79.391	7.391
73 years	3,098	247,849.314	80.003	7.003
74 years	2,836	228,620.943	80.614	6.614
75 years	2,595	210,692.388	81.192	6.192
76 years	2,305	188,839.798	81.926	5.926
77 years	2,019	167,010.752	82.720	5.720
78 years	1,786	148,979.565	83.415	5.415
79 years	1,571	132,134.786	83.854	4.854
80 years	1,367	115,947.229	84.819	4.819
81 years	1,175	100,517.829	85.547	4.547
82 years	997	86,028.744	86.288	4.288
83 years	830	72,275.812	87.079	4.079
84 years	698	61,275.733	87.788	3.788
85 years	555	49,213.099	88.672	3.672
86 years	445	39,826.696	89.498	3.498
87 years	339	30,679.934	90.501	3.501
88 years	270	24,651.741	91.303	3.303
89 years	200	18,463.778	92.319	3.319
90 years	159	14,797.156	93.064	3.064
91 years	120	11,276.568	93.971	2.971
92 years	95	8,994.412	94.678	2.678
93 years	66	6,315.820	95.694	2.694
94 years	44	4,264.225	96.914	2.914
95 years	36	3,507.857	97.440	2.440
96 years	23	2,268.842	98.645	2.645
97 years	15	1,497.264	99.818	2.818
98 years	11	1,107.663	100.697	2.697
99 years	8	813.080	101.635	2.635
100 years	6	613.498	102.250	2.250
103 years	3	313.332	104.444	1.444
105 years	2	210.332	105.166	0.166
Total.....	16,541	722,166.433	43.659	.....

TABLE XXXII-C.

PRESUMPTIVE EXPECTANCY AND DURATION OF LIFE — COLORED — 1916.

<i>Deaths Over the Age of</i>	<i>Number</i>	<i>Total Years Lived</i>	<i>Presumptive Duration Years</i>	<i>Presumptive Expectancy at Age</i>
1 year	4,579	182,466.019	39.848	38.848
2 years	4,282	182,068.342	42.519	40.519
3 years	4,143	181,740.885	43.867	40.867
4 years	4,078	181,526.578	44.514	40.514
5 years	4,037	181,344.807	44.921	39.921
6 years	4,014	181,218.527	45.147	39.147
7 years	3,976	180,980.002	45.518	38.518
8 years	3,954	180,817.724	45.730	37.730
9 years	3,929	180,609.382	45.968	36.968
10 years	3,911	180,440.996	46.137	36.137
11 years	3,886	180,180.573	46.367	35.367
12 years	3,869	179,988.247	46.521	34.521
13 years	3,845	179,693.112	46.734	33.734
14 years	3,816	179,308.120	46.989	32.989
15 years	3,775	178,719.953	47.343	32.343
16 years	3,745	178,260.946	47.600	31.600
17 years	3,698	177,493.361	47.997	30.997
18 years	3,647	176,608.344	48.426	30.426
19 years	3,583	175,438.847	48.964	29.964
20 years	3,519	174,206.198	49.504	29.504
21 years	3,463	173,072.197	49.978	28.978
22 years	3,386	171,436.370	50.631	28.631
23 years	3,311	169,766.856	51.274	28.274
24 years	3,240	168,116.316	51.888	27.888
25 years	3,175	166,544.624	52.455	27.455
26 years	3,122	165,206.999	52.917	26.917
27 years	3,056	163,475.254	53.493	26.493
28 years	2,995	161,813.082	54.028	26.028
29 years	2,936	160,154.531	54.549	25.549
30 years	2,889	158,783.088	54.961	24.961
31 years	2,810	156,398.694	55.658	24.658
32 years	2,774	155,276.994	55.976	23.976
33 years	2,712	153,282.303	56.520	23.520
34 years	2,657	151,457.109	57.003	23.003
35 years	2,618	150,120.646	57.314	22.314
36 years	2,540	147,379.371	58.023	22.023
37 years	2,484	145,355.573	58.517	21.517
38 years	2,442	143,794.460	58.884	20.884
39 years	2,385	141,619.372	59.379	20.379
40 years	2,322	139,151.783	59.928	19.928
41 years	2,247	136,143.856	60.589	19.589
42 years	2,188	133,715.600	61.113	19.113
43 years	2,115	130,639.242	61.768	18.768
44 years	2,049	127,790.777	62.367	18.367
45 years	1,987	125,054.288	62.936	17.936
46 years	1,887	120,541.037	63.880	17.880
47 years	1,838	118,280.088	64.353	17.353
48 years	1,798	116,393.370	64.735	16.735
49 years	1,749	114,033.528	65.199	16.199
50 years	1,689	111,087.203	65.771	15.771
51 years	1,591	106,179.717	66.738	15.738
52 years	1,538	103,470.021	67.276	15.276
53 years	1,475	100,186.138	67.923	14.923
54 years	1,422	97,368.174	68.473	14.473

TABLE XXXII-C -- *Continued.*

<i>Deaths Over the Age of</i>	<i>Number</i>	<i>Total Years Lived</i>	<i>Presumptive Duration Years</i>	<i>Presumptive Expectancy at Age</i>
55 years	1,368	94,445.434	69.039	14.039
56 years	1,285	89,866.869	69.935	13.935
57 years	1,233	86,946.654	70.516	13.516
58 years	1,190	84,490.389	71.000	13.000
59 years	1,143	81,760.062	71.531	12.531
60 years	1,099	79,158.530	72.028	12.028
61 years	994	72,853.620	73.293	12.293
62 years	952	70,285.627	73.829	11.829
63 years	907	67,490.343	74.411	11.411
64 years	859	64,462.373	75.044	11.044
65 years	819	61,896.193	75.575	10.575
66 years	740	56,751.126	76.691	10.691
67 years	702	54,234.948	77.258	10.258
68 years	665	51,746.210	77.814	9.814
69 years	626	49,091.382	78.421	9.421
70 years	604	47,569.266	78.757	8.757
71 years	523	41,895.770	80.107	9.107
72 years	486	39,263.154	80.788	8.788
73 years	452	36,809.226	81.436	8.436
74 years	424	34,761.960	81.986	7.986
75 years	394	32,538.132	82.584	7.584
76 years	330	27,732.806	84.039	8.039
77 years	298	25,298.644	84.895	7.895
78 years	275	23,523.546	85.540	7.540
79 years	257	22,116.385	86.056	7.056
80 years	244	21,085.745	86.417	6.417
81 years	188	16,602.313	88.310	7.310
82 years	176	15,626.547	88.787	6.787
83 years	153	13,736.596	89.782	6.782
84 years	138	12,487.580	90.490	6.490
85 years	124	11,309.146	91.203	6.203
86 years	105	9,693.398	92.318	6.318
87 years	90	8,401.132	93.346	6.346
88 years	82	7,704.363	93.956	5.956
89 years	74	6,999.781	94.592	5.592
90 years	68	6,464.948	95.073	5.073
91 years	50	4,844.699	96.894	5.894
92 years	47	4,570.617	97.247	5.247
93 years	39	3,831.933	98.255	5.255
94 years	37	3,645.350	98.523	4.523
95 years	33	3,269.267	99.069	4.069
96 years	28	2,794.018	99.786	3.786
97 years	20	2,025.249	101.262	4.262
99 years	14	1,443.249	103.089	4.089
100 years	13	1,344.249	103.404	3.404
102 years	9	944.249	104.917	2.917
103 years	7	740.249	105.750	2.750
104 years	6	637.249	106.208	2.208
106 years	4	429.000	107.250	1.250
107 years	3	323.000	107.667	0.667
108 years	2	216.000	108.000	0.000
Total.....	5,893	182,806.700	31.021	.....

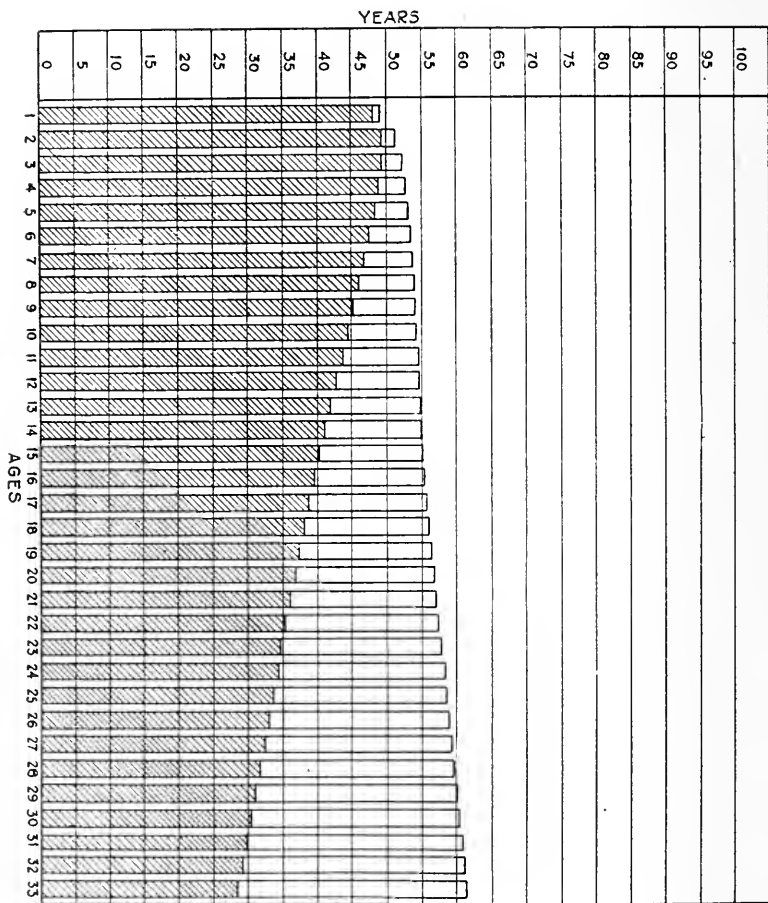


CHART 20-A — *Presumptive Expectation and Duration of Life,*
Total Maryland — 1916.

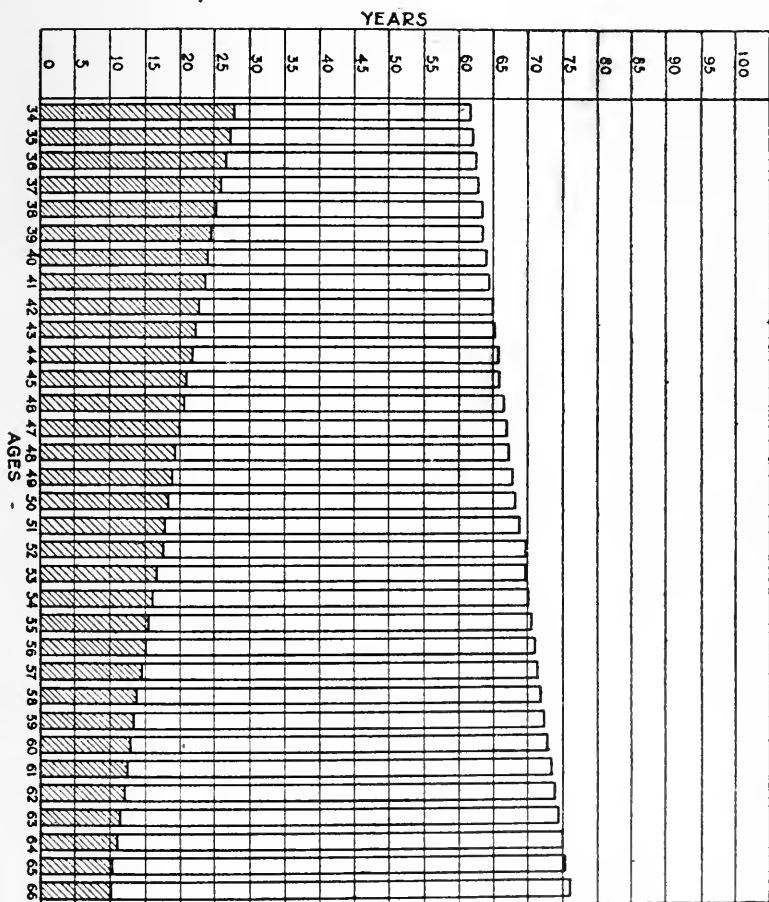


CHART 20-B — *Presumptive Expectation and Duration of Life,*
Total Maryland — 1916.

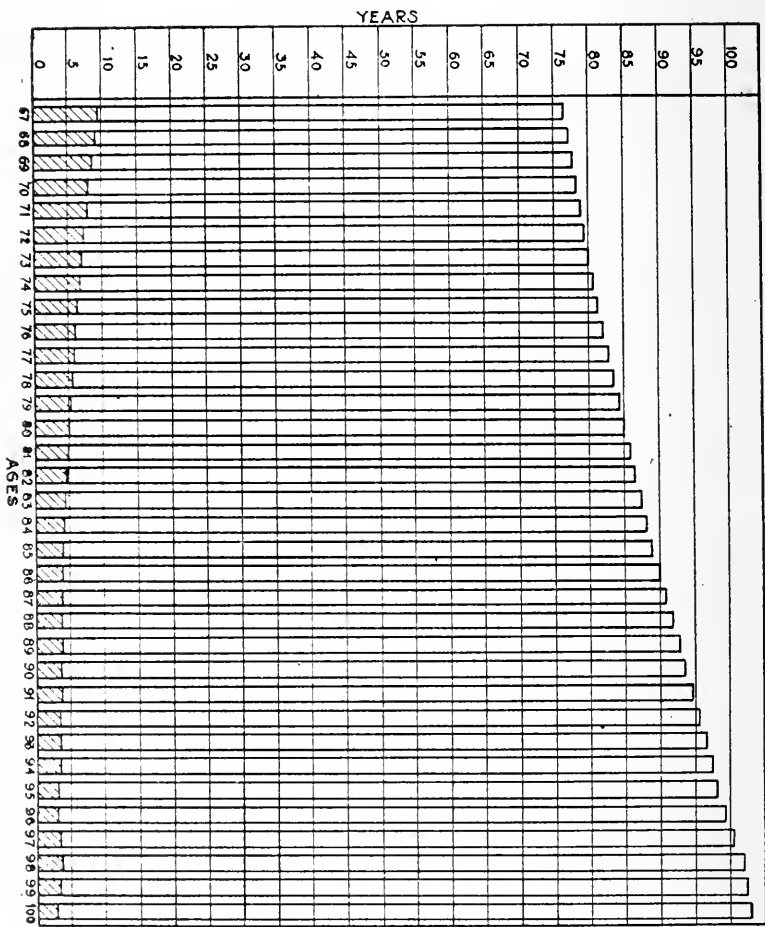


CHART 20-C — *Presumptive Expectation and Duration of Life,*
Total Maryland — 1916.

The succeeding tables (Tables XXXIII and XXXIV) give the average age at death by counties and by months, respectively.

The county giving the lowest average age at death in 1916 was Charles County (30.678); the highest average age at death was in Carroll County (51.048).

The next table (Table XXXIV) gives the average age at death by months.

The lowest average age at death is in August. The average age at death in this month is 32.935. It is evident that in this State the high infant mortality in July, August and September the lowest average age at death will always fall in one of these three months.

By reference to the table it will be seen that the average age at deaths falls below the mean in the months of July, August, September and October. In all the other months the figures are above the mean.

TABLE XXXIII.

MEAN AGE AT DEATH BY COUNTIES — 1916.

<i>Counties</i>	<i>Total Deaths</i>	<i>Total Age of Decedents</i>	<i>Average Age at Death</i>
Allegany	965	36,618.857	37.947
Anne Arundel	790	28,638.701	36.252
Baltimore	2,785	121,385.142	43.585
Calvert	151	5,348.389	35.420
Caroline	278	10,529.441	37.876
Carroll	525	26,800.095	51.048
Cecil	343	16,365.892	47.714
Charles	296	9,080.678	30.678
Dorchester	530	18,850.525	35.567
Frederick	812	37,287.470	45.921
Garrett	249	9,240.809	37.112
Harford	391	18,394.536	47.045
Howard	226	9,282.077	41.071
Kent	277	10,771.880	38.888
Montgomery	423	17,512.289	41.400
Prince George's	548	21,104.496	38.512
Queen Anne's	266	10,753.712	40.427
Somerset	388	13,719.043	35.358
St. Mary's	271	9,632.472	35.544
Talbot	346	14,551.492	42.056
Washington	777	32,009.622	41.196
Wicomico	442	17,346.604	31.425
Worcester	317	11,758.455	37.093
Total Counties.....	12,396	506,982.677	40.899
Baltimore City	10,038	397,990.456	39.648
Maryland	22,434	904,973.133	40.339

TABLE XXXIV.
MEAN AGE AT DEATH BY MONTHS — 1916.

Month	Rural Maryland				Baltimore City				Maryland			
	Total Deaths	Total Age of Decedents	Average Age at Death		Total Deaths	Total Age of Decedents	Average Age at Death		Total Deaths	Total Age of Decedents	Average Age at Death	
January	1,233	56,204.008	45.583		1,024	45,726.901	44.655		2,257	101,930.909	45.162	
February	1,059	45,485.704	42.952		859	36,104.918	42.031		1,918	81,590.622	42.539	
March	1,127	50,384.371	44.707		1,033	42,142.807	40.797		2,160	92,527.178	42.837	
April	1,016	43,107.489	42.429		938	36,989.757	39.435		1,954	80,097.246	40.991	
May	898	38,953.555	43.378		802	32,156.355	40.095		1,700	71,109.910	41.829	
June	874	36,052.894	41.250		699	27,727.087	39.667		1,573	63,779.981	40.547	
July	998	37,180.005	37.255		800	27,590.809	34.489		1,798	64,770.814	36.024	
August	1,134	38,700.210	34.127		847	26,544.297	31.339		1,981	65,244.507	32.935	
September	1,012	36,136.794	35.708		696	22,897.545	32.899		1,708	59,034.339	34.563	
October	973	36,972.124	37.998		768	29,403.986	38.286		1,741	66,376.110	38.125	
November	1,033	42,663.916	41.301		736	33,048.385	44.903		1,769	75,712.301	42.799	
December	1,039	45,141.607	43.447		836	37,657.609	45.045		1,875	82,799.216	44.160	
Total	12,396	506,982.677	40.899		10,038	397,990.456	39.648		22,434	904,973.133	40.339	

MARYLAND BIOMETER.

This biometer is constructed on a table of survivorship, in which 10,000 persons born in a given year are traced throughout life, under the sanitary conditions of the year of computation, as indicated by the mortality returns.

If the death rates for the several age periods are determined for any given year, we may, by applying these rates to the estimated population of this year, construct a table of survivorship showing the number surviving at certain periods thereafter among those born in the given year.

Thus, of 10,000 persons born in Maryland during 1916, we have to determine the number surviving at the end of five years, of ten years, etc., providing the death rate of 1916 remains constant. A chart constructed from this table will indicate the sanitary condition of the State during the year 1916, and, described in the manner presently to be mentioned, forms the "Maryland Biometer."

The Maryland Biometer is shown in the chart in quinquennial periods for the year 1916, assuming the death rate of that year to remain constant. Instead of considering the whole population as a basis the scale is reduced to a population of 10,000 for the convenience of comparison with succeeding years. Of a population of 10,000 born in Maryland during 1916, how many will be living and how many dead at the end of 5 years, of ten years, etc.? This table and chart indicate survivorship and give both the number of living and dead at each quinquennial period after 1916.

Such charts readily admit of comparison with preceding or following years, as variations in the mortality at the various ages appear in the curve in their proper positions and do not (as in the expectancy tables) merely modify the form of the curve.

The only factors necessary in the construction of this curve are the mortality rates for the several age periods (0-5, 5-10, etc.), which may be applied first to the original population of 10,000, then to the remaining population, after deducting the deaths from 0-5, etc. Applying the death rates obtained from Table XIX-A to 10,000 persons born in 1916, the survivorship at succeeding quinquennial periods is shown in Table XXXV-A. In Table XXXV-B the survivorship with regard to color is shown.

TABLE XXV-A.

SURVIVORSHIP IN MARYLAND, 1916, TOTAL POPULATION.

SURVIVORS OF 10,000 PERSONS BORN IN MARYLAND IN 1916 AT SUCCEEDING
QUINQUENNIAL PERIODS. ASSUMING THE DEATH RATE OF
THAT YEAR TO BE CONSTANT.

Number born in 1916.....	10,000
Number reaching age of 5 years (A. D. 1920).....	8,094
Number reaching age of 10 years (A. D. 1925).....	7,970
Number reaching age of 15 years (A. D. 1930).....	7,873
Number reaching age of 20 years (A. D. 1935).....	7,699
Number reaching age of 25 years (A. D. 1940).....	7,455
Number reaching age of 30 years (A. D. 1945).....	7,188
Number reaching age of 35 years (A. D. 1950).....	6,888
Number reaching age of 40 years (A. D. 1955).....	6,565
Number reaching age of 45 years (A. D. 1960).....	6,159
Number reaching age of 50 years (A. D. 1965).....	5,662
Number reaching age of 55 years (A. D. 1970).....	5,103
Number reaching age of 60 years (A. D. 1975).....	4,370
Number reaching age of 65 years (A. D. 1980).....	3,540
Number reaching age of 70 years (A. D. 1985).....	2,562
Number reaching age of 75 years (A. D. 1990).....	1,507
Number reaching age of 80 years (A. D. 1995).....	512

TABLE XXXV-B.

COMPARATIVE TABLE OF SURVIVORSHIP IN MARYLAND, 1916 —
WHITE AND COLORED.

NUMBER OF SURVIVORS OF 10,000 PERSONS BORN IN MARYLAND IN 1916 AT
SUCCEEDING QUINQUENNIAL PERIODS. ASSUMING THE DEATH RATES
OF THAT YEAR TO REMAIN CONSTANT.

	<i>White</i>	<i>Colored</i>
Number born in 1916.....	10,000	10,000
Number reaching age of 5 years (A. D. 1920).....	8,462	6,395
Number reaching age of 10 years (A. D. 1925).....	8,350	6,236
Number reaching age of 15 years (A. D. 1930).....	8,277	6,062
Number reaching age of 20 years (A. D. 1935).....	8,152	5,728
Number reaching age of 25 years (A. D. 1940).....	7,969	5,307
Number reaching age of 30 years (A. D. 1945).....	7,742	4,942
Number reaching age of 35 years (A. D. 1950).....	7,483	4,541
Number reaching age of 40 years (A. D. 1955).....	7,199	4,134
Number reaching age of 45 years (A. D. 1960).....	6,841	3,622
Number reaching age of 50 years (A. D. 1965).....	6,355	3,148
Number reaching age of 55 years (A. D. 1970).....	5,808	2,612
Number reaching age of 60 years (A. D. 1975).....	5,045	2,029
Number reaching age of 65 years (A. D. 1980).....	4,153	1,479
Number reaching age of 70 years (A. D. 1985).....	3,012	1,055
Number reaching age of 75 years (A. D. 1990).....	1,772	619
Number reaching age of 80 years (A. D. 1995).....	594	232

This biometer is graphically shown in Chart No. 21. It is evident that such a chart will indicate the life condition of the State, both in its form and in its area. To calculate the area it is only necessary to measure the length of the perpendiculars to the base line from each component point of the curve, and take the same measurement for the next succeeding point. The area of each trapezoid is calculated in the usual manner, by taking the product of one-half the sum of its parallel sides by its altitude.

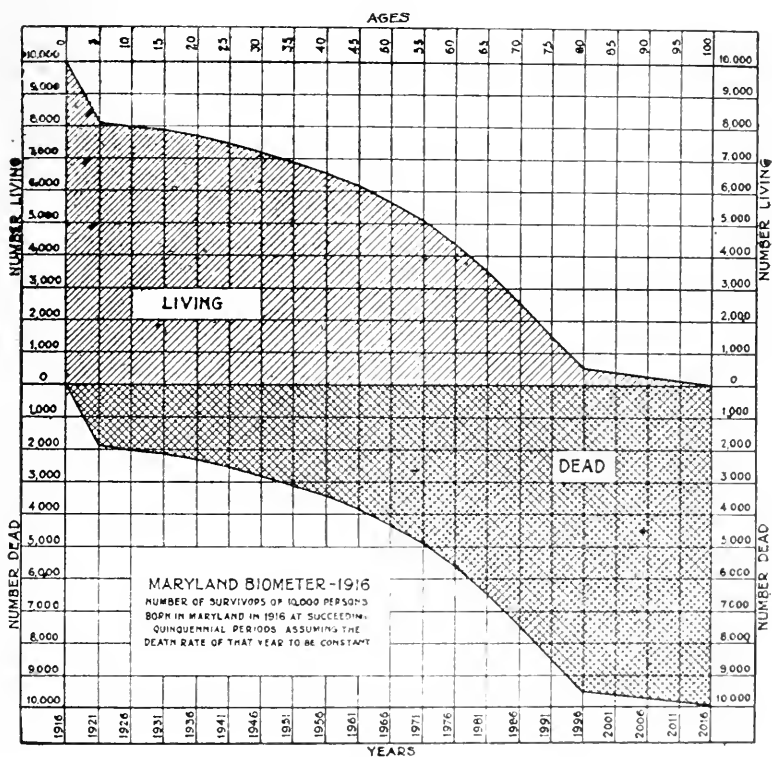


CHART 21.

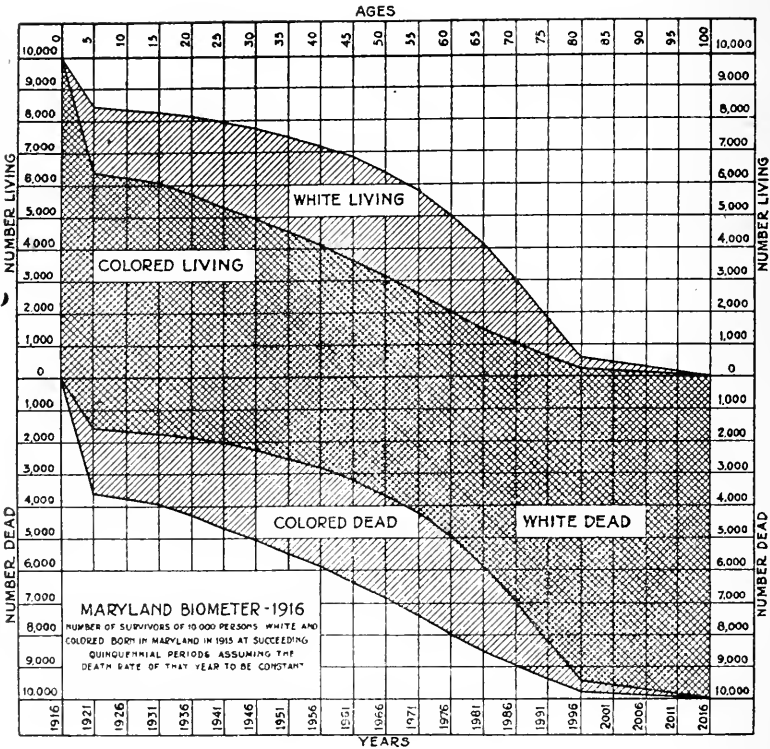


CHART 22 — Illustrating the Higher Death Rate in the Colored Population.. In the upper biometer the total white living comprises the area marked "colored living" plus the area marked "white living." In the lower biometer the colored dead comprises the area marked "white dead" plus the area marked colored dead.

TABLE XXXVI-A.

ESTIMATED POPULATIONS OF MARYLAND.

	1911	1912	1913	1914	1915	1916
0- 5 years	138,900	140,039	141,178	142,317	143,457	144,596
5-10 years	134,756	135,854	136,952	138,049	139,148	140,246
10-15 years	130,750	131,820	132,890	133,961	135,032	136,101
15-20 years	129,242	130,311	131,379	132,447	133,517	134,585
20-25 years	124,393	125,410	126,425	127,441	128,457	129,473
25-30 years	111,123	112,030	112,938	113,845	114,752	115,660
30-35 years	96,807	97,618	98,428	99,239	100,049	100,860
35-40 years	93,172	93,944	94,717	95,489	96,262	97,034
40-45 years	79,428	80,094	80,760	81,426	82,091	82,757
45-50 years	68,560	69,136	69,713	70,290	70,867	71,443
50-55 years	59,689	60,198	60,707	61,216	61,725	62,235
55-60 years	43,583	43,964	44,344	44,725	45,106	45,486
60-65 years	35,289	35,596	35,902	36,207	36,514	36,819
65-70 years	26,816	27,051	27,285	27,519	27,752	27,986
70-75 years	17,814	17,968	18,124	18,280	18,435	18,590
75-80 years	9,925	10,014	10,102	10,192	10,280	10,370
80 years and over	6,880	6,938	6,998	7,057	7,115	7,174
Unknown	1,349	1,357	1,366	1,374	1,381	1,391
Total.....	1,308,476	1,319,342	1,330,208	1,341,074	1,351,940	1,362,806

TABLE XXXVI-B.

DEATHS BY AGES.

	1911	1912	1913	1914	1915	1916
0- 5 years	5,467	5,415	5,896	5,419	5,084	5,512
5-10 years	426	373	436	397	371	431
10-15 years	320	272	289	299	308	331
15-20 years	574	556	591	573	544	594
20-25 years	763	742	793	803	737	821
25-30 years	850	843	845	814	795	828
30-35 years	774	826	805	757	817	843
35-40 years	857	885	818	912	930	909
40-45 years	842	904	892	1,006	942	1,023
45-50 years	921	940	964	1,029	1,032	1,153
50-55 years	1,077	1,127	1,101	1,156	1,210	1,229
55-60 years	1,017	1,056	1,095	1,250	1,317	1,307
60-65 years	1,215	1,276	1,186	1,322	1,435	1,399
65-70 years	1,285	1,377	1,293	1,403	1,462	1,547
70-75 years	1,325	1,370	1,413	1,483	1,497	1,531
75-80 years	1,105	1,106	1,142	1,211	1,303	1,369
80 years and over	1,414	1,458	1,420	1,467	1,485	1,607
Unknown	58	71	69	82	81	76
Total.....	20,290	20,597	21,048	21,383	21,350	22,510

TABLE XXXVI-C.

DEATH RATE PER THOUSAND AT AGE PERIODS.

	1911	1912	1913	1914	1915	1916
0-5 years	39.36	38.67	41.76	38.08	35.44	38.12
5-10 years	3.16	2.75	3.18	2.88	2.67	3.07
10-15 years	2.45	2.06	2.17	2.23	2.28	2.43
15-20 years	4.44	4.27	4.50	4.33	4.07	4.41
20-25 years	6.13	5.92	6.27	6.30	5.74	6.34
25-30 years	7.65	7.52	7.48	7.15	6.93	7.16
30-35 years	8.00	8.46	8.18	7.63	8.17	8.36
35-40 years	9.20	9.42	8.64	9.55	9.66	9.37
40-45 years	10.60	11.29	11.05	12.35	11.47	12.36
45-50 years	13.43	13.60	13.83	14.64	14.56	16.14
50-55 years	18.04	18.72	18.14	18.88	19.60	19.75
55-60 years	23.33	24.02	24.69	27.95	29.20	28.73
60-65 years	34.43	35.85	33.03	36.51	39.30	38.00
65-70 years	47.92	47.40	47.39	50.98	52.68	55.28
70-75 years	74.38	76.25	77.96	81.13	81.20	82.36
75-80 years	111.33	110.45	113.05	118.82	126.75	132.02
80 years and over	205.52	210.15	202.92	207.88	208.71	224.00
Unknown	42.99	52.32	50.51	59.68	58.65	54.29
Total	15.51	15.61	15.82	15.94	15.79	16.52

TABLE XXXVII.

SURVIVORSHIP BY AGES — 1911, 1912, 1913, 1914, 1915, 1916.

10,000 Born in	1911	1912	1913	1914	1915	1916
Number reaching 5 years...	8,032	8,066	7,912	8,096	8,228	8,094
Number reaching 10 years...	7,905	7,955	7,786	7,979	8,118	7,970
Number reaching 15 years...	7,808	7,873	7,702	7,890	8,025	7,873
Number reaching 20 years...	7,635	7,705	7,529	7,719	7,862	7,699
Number reaching 25 years...	7,401	7,477	7,293	7,476	7,636	7,455
Number reaching 30 years...	7,118	7,196	7,020	7,209	7,371	7,188
Number reaching 35 years...	6,833	6,892	6,733	6,934	7,070	6,888
Number reaching 40 years...	6,519	6,567	6,442	6,603	6,729	6,565
Number reaching 45 years...	6,173	6,196	6,086	6,195	6,343	6,159
Number reaching 50 years...	5,758	5,775	5,665	5,742	5,881	5,662
Number reaching 55 years...	5,239	5,234	5,151	5,200	5,305	5,103
Number reaching 60 years...	4,628	4,605	4,515	4,473	4,530	4,370
Number reaching 65 years...	3,831	3,780	3,769	3,656	3,640	3,540
Number reaching 70 years...	2,913	2,884	2,876	2,724	2,681	2,562
Number reaching 75 years...	1,830	1,784	1,755	1,619	1,593	1,507
Number reaching 80 years...	811	799	763	657	583	512

Table XXXVIII gives the marriages in Baltimore and in its various counties, by months. Of the 20,397 marriage returns, 7,022 were made to the clerks of the court of Baltimore City and returns for 13,375 were made to the clerks of the courts of the counties.

Table XXXIX gives the divorces for Baltimore City and the several counties by months. Out of the total of 961 divorces recorded in the State during the time covered by these returns, 620 were issued in the courts of Baltimore City.

TABLE XXXVIII.

MARRIAGES FOR MARYLAND — 1916.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Allegany	132	164	165	177	189	154	234	104	191	206	220	230	2,166
Anne Arundel ...	13	21	12	29	31	38	22	25	32	23	24	31	301
Baltimore	60	47	50	66	49	106	63	57	79	77	95	67	816
Calvert	6	3	3	9	6	6	6	3	8	6	4	12	72
Caroline	22	12	14	11	4	12	12	17	6	16	16	32	174
Carroll	33	23	28	18	15	27	15	15	15	18	30	35	272
Cecil	212	236	212	243	225	323	329	286	327	290	308	318	3,309
Charles	15	6	6	10	13	7	7	9	7	9	9	11	109
Dorchester	21	20	22	20	17	18	12	19	27	26	24	30	256
Frederick	48	29	44	34	33	57	28	51	44	63	40	68	539
Garrett	50	33	43	48	58	73	75	73	85	58	62	79	737
Harford	13	22	16	22	16	27	15	15	25	21	22	29	243
Howard	65	53	42	59	70	88	80	86	82	92	71	56	839
Kent	12	13	11	10	9	11	16	10	11	17	13	25	158
Montgomery	28	29	34	52	43	53	51	45	54	40	44	55	528
Prince George's ...	10	5	10	6	19	22	7	20	12	18	17	14	160
Queen Anne's ...	20	7	3	4	9	13	12	7	7	8	10	21	121
Somerset	18	16	8	23	19	19	27	33	28	25	36	30	282
St. Mary's	15	9	12	2	2	6	9	3	2	9	8	23	100
Talbot	16	8	15	8	8	13	14	8	16	13	17	22	158
Washington	104	102	101	125	101	112	123	127	127	188	124	153	1,487
Wicomico	25	18	21	25	18	26	29	29	32	28	25	48	324
Worcester	19	17	8	18	17	17	22	24	16	19	16	31	224
Total Counties...	957	893	880	1,019	971	1,223	1,208	1,066	1,233	1,270	1,235	1,420	13,375
Baltimore City ...	497	448	464	544	490	908	495	461	677	673	749	606	7,022
Maryland	1,454	1,341	1,344	1,563	1,461	2,131	1,703	1,537	1,910	1,943	1,984	2,026	20,397

TABLE XXXIX.

DIVORCES FOR MARYLAND — 1916.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Allegany	2	10	3	6	4	6	4	7	2	5	6	6	61
Anne Arundel	2	0	0	4	2	0	2	2	0	0	2	3	17
Baltimore	4	4	5	2	1	10	5	3	2	0	0	0	36
Calvert	2	0	0	0	1	0	0	0	0	0	0	2	5
Caroline	0	0	0	0	0	0	0	0	0	2	4	2	8
Carroll	0	0	0	2	0	1	0	0	0	1	2	1	7
Cecil	0	1	2	0	0	1	0	0	0	0	0	0	4
Charles	0	2	0	1	0	0	0	1	0	0	0	2	6
Dorchester	0	0	2	0	1	0	4	1	3	1	2	0	14
Frederick	1	1	5	0	3	6	6	8	5	5	5	3	48
Garrett	1	0	2	0	0	1	1	1	2	1	3	0	12
Harford	0	0	0	1	2	3	0	1	0	0	4	0	11
Howard	0	0	0	0	1	0	0	0	3	0	0	3	7
Kent	1	1	2	1	0	0	0	0	0	0	0	0	5
Montgomery	3	0	1	3	1	2	1	2	0	0	1	0	14
Prince George's...	0	1	1	0	1	0	0	0	4	1	1	1	10
Queen Anne's	0	1	0	0	0	0	0	0	0	0	0	2	3
Somerset	2	2	0	0	0	2	0	2	0	1	1	2	12
St. Mary's	0	1	0	0	0	0	1	0	0	0	0	0	2
Talbot	2	0	1	1	0	0	0	0	0	0	0	1	5
Washington	4	2	3	2	1	6	2	3	7	5	1	4	40
Wicomico	0	0	0	0	0	0	0	0	0	0	0	0	0
Worcester	1	3	1	1	2	2	3	0	0	0	1	0	14
Total Counties...	25	29	28	24	20	40	29	31	28	22	33	32	341
Baltimore City ...	45	54	55	47	56	58	50	45	33	55	66	56	620
Total Maryland.	70	83	83	71	76	98	79	76	61	77	99	88	961

REPORT OF BUREAU OF COMMUNICABLE DISEASES.

C. HAMPSON JONES, Chief.

Baltimore, Md., June, 1920.

DR. JOHN S. FULTON,

*Secretary State Department of Health,**. Baltimore, Md.**Dear Doctor:*

I have the honor to transmit herewith the report of the Bureau of Communicable Diseases for the calendar year 1916. The data contained therein have been arranged under the following five sub-headings:

- I. Notifiable Disease Reports.
- II. Poliomyelitis, or Infantile Paralysis.
- III. Sanitary Surveys and Investigations.
- IV. Public Health Conditions by Counties.
- V. Prosecutions.

I.—NOTIFIABLE DISEASE REPORTS.

In 1916, in the counties of Maryland there were 18,445 cases of notifiable diseases reported, as contrasted with 5,821 cases in 1912, 12,113 cases in 1913, 9,061 cases in 1914, and 9,954 cases in 1915. The above figures are for the State of Maryland exclusive of Baltimore City. They do not include the county tuberculosis cases. Anterior poliomyelitis, measles, whooping cough, influenza and chicken-pox were the prevailing epidemics.

The following is a detailed statement of the 1916 figures with comparative figures for 1912, 1913, 1914 and 1915.

COMPARISON OF COMMUNICABLE DISEASES REPORTED IN THE
COUNTIES OF MARYLAND FROM 1912 to 1916 (INCLUSIVE).

	1912	1913	1914	1915	1916
Typhoid Fever	1,791	2,983	1,860	2,279	1,863
Malaria	14	13	96	64	120
Smallpox	20	132	216	82	69
Measles	1,675	5,352	2,000	1,049	9,266
Scarlet Fever	608	822	1,655	1,141	1,001
Whooping Cough	441	812	768	906	1,684
Diphtheria	784	1,049	790	1,390	1,154
Influenza	61	13	31	854	1,110
Erysipelas	18	30	42	95	130
Chickenpox	251	549	732	984	1,164
German Measles	11	29	259	206	142
Measles	108	287	470	602	457
Meningitis	6	11	30	54	8
Epidemic Meningitis	0	0	0	0	8
Tubercular Meningitis	0	0	0	0	26
Cerebro Spinal Meningitis	0	0	0	0	21
Poliomyelitis	32	9	12	40	147
Septic Sore Throat	0	5	18	39	21
Dysentery	1	1	30	89	21
Septicemia	4	1	16	49	15
Ophthalmia Neonatorum	0	2	2	7	11
Tuberculosis	522	545	1,157	1,164	1,457
Catarrhal Conjunctivitis	0	8	0	0	0
Pellagra	0	5	2	13	2
Scabies	0	0	4	1	0
Puerperal Sepsis	0	0	3	0	0
Tetanus	0	0	2	0	1
Ring Worm	0	0	1	0	0
Impetigo Contagiosa	0	0	13	0	1
Cervical Adenitis	0	0	0	3	0
Foot and Mouth Disease	0	0	0	1	0
Conjunctivitis	0	0	0	1	0
Rabies	0	0	0	1	2
Anthrax	0	0	0	1	0
Typhus Fever	0	0	0	0	1
Purulent Conjunctivitis	0	0	0	0	2
Trachoma	1	0	0	3	1
Total	6,343	12,658	10,218	11,118	19,902

The following table will give a condensed summary of the counties of Maryland in regard to the reporting of notifiable diseases. For purposes of comparison the figures for the three previous years have also been included.

STATUS OF THE COUNTIES OF MARYLAND — COMMUNICABLE
DISEASE REPORTS — 1913, 1914, 1915, 1916.

<i>Name of County.</i>	<i>Number of Cases Reported.</i>			
	1913	1914	1915	1916
Allegany	2,273	1,436	962	2,666
Baltimore	2,173	1,696	2,131	3,490
Frederick	994	337	554	1,462
Prince George's	831	475	554	956
Anne Arundel	827	417	388	725
Washington	643	493	664	1,986
Carroll	587	359	685	963
Howard	522	440	244	553
Somerset	376	289	352	646
Montgomery	316	276	466	927
Talbot	310	159	311	312
Harford	308	156	285	676
Dorchester	299	841	367	386
Charles	290	236	169	385
Queen Anne's	228	283	154	291
Cecil	208	172	260	586
Calvert	194	174	136	174
Wicomico	181	279	180	257
Garrett	161	75	117	262
Caroline	122	167	196	287
Kent	122	97	338	247
Worcester	109	180	215	136
St. Mary's	37	27	205	71

The reported cases of notifiable disease, Rural Maryland (the State of Maryland, exclusive of Baltimore City) for 1916 by months and diseases will next be shown in the form of a table. Three of the rarer communicable diseases appear in the list for this year. These are: Two cases of rabies, one in March and the other in November, a case of typhus fever in August, and a case of sprue in October.

REPORTED CASES OF NOTIFIABLE DISEASES — RURAL
MARYLAND — BY MONTHS AND DISEASES — 1916.

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Para Typhoid.....	1	1	0	1	0	1	0	3	13	5	0	1	26
Typhoid Fever.....	73	45	46	51	58	79	157	426	395	271	150	86	1,837
Malaria.....	2	0	1	1	3	6	6	29	50	15	4	3	120
Smallpox.....	1	9	0	32	13	2	9	1	1	0	1	0	69
Measles.....	313	733	1,478	1,331	1,539	1,513	422	177	138	170	667	782	9,263
Scharlet Fever.....	168	91	133	85	75	44	42	27	44	96	96	100	1,001
Whooping Cough.....	118	166	163	175	148	235	181	136	90	78	60	134	1,684
Diphtheria.....	142	127	91	43	63	42	27	50	129	181	144	115	1,154
Influenza.....	474	343	147	88	16	6	1	1	2	2	3	27	1,110
Erysipelas.....	18	14	12	19	10	11	2	3	6	8	13	14	130
Chickenpox.....	177	112	135	85	97	48	42	20	10	52	179	207	1,164
German Measles.....	10	11	18	25	16	11	4	11	3	9	10	14	142
Mumps.....	27	57	67	89	55	47	11	14	16	14	18	42	457
Meningitis.....	2	3	1	0	0	0	1	1	0	0	0	0	8
Epidemic Meningitis.....	0	0	0	0	0	0	2	4	1	1	0	0	8
Tubercular Meningitis.....	0	0	0	0	8	2	2	5	1	5	2	1	26
Cerebro Spinal Meningitis.....	6	1	0	6	2	1	1	1	0	1	1	1	21
Polomyelitis.....	2	1	0	0	0	0	7	28	33	47	26	3	147
Septic Sore Throat.....	2	4	3	1	0	1	3	0	1	2	2	2	21
Trachoma.....	0	0	0	0	0	0	0	0	0	0	0	1	1
Rabies.....	0	0	1	0	0	0	0	0	0	0	0	1	2
Septicemia.....	4	0	0	4	5	2	0	0	0	0	0	0	15
Ophthalmia Neonatorum.....	0	2	0	0	1	0	1	2	1	2	2	0	11
Tetanus.....	0	0	0	0	0	0	0	0	0	0	1	0	1
Tuberculosis—(For entire year)....	1	0	0	0	0	1	4	2	1	8	2	2	1,228
Dysentery.....	0	1	0	0	0	0	0	0	0	0	0	0	21
Impetigo Contagiosa.....	0	1	0	0	0	0	0	0	0	0	0	0	1
Pellagra.....	0	1	0	1	0	0	0	0	0	0	0	0	2
Purulent Conjunctivitis.....	0	0	2	0	0	0	0	0	0	0	0	0	2
Typhus Fever.....	0	0	0	0	0	0	0	1	0	0	0	0	1
Total.....	1,541	1,722	2,298	2,037	2,109	2,052	925	942	935	967	1,382	1,535	19,673

II.—POLIOMYELITIS, OR INFANTILE PARALYSIS.

Special mention should be made of the outbreak of poliomyelitis or infantile paralysis, which occurred during the year 1916, in New York City and the northeastern section of the United States. Beginning in the Brooklyn Borough of Greater New York City on May 8th, this disease rapidly spread throughout the metropolis, subsequently sweeping across the entire northeastern United States. It reached Maryland on June 15th, making its first appearance at Glenburnie, in Anne Arundel County. On July 12th a case developed in the city of Baltimore.

Except in certain isolated sections of Baltimore City, the 1916 poliomyelitis outbreak at no time or place assumed real epidemic proportions in Maryland. During the year there was a total of 353 cases reported, for the entire State of Maryland, of which number 206 occurred in Baltimore City, and 147 in the counties. Of these 353 cases of sickness from poliomyelitis, 117 terminated fatally, 70 of the deaths being in Baltimore City and 47 in the counties.

Of the 353 reported cases of sickness from poliomyelitis, 285 occurred in white persons, and 68 in colored persons. In regard to sex, 189 were males and 164 were females. Of the 147 county cases, 136 were white, and 11 were colored; 82 were males, and 65 were females.

In the counties of Maryland there were seven cases of poliomyelitis reported in July. The disease, however, prevailed most extensively during the months of August, September, October and November, reaching its crest on October 11th, after which it began to show a rapid decline. In August, 28 cases were reported; in September, 33 cases; in October, 47 cases; and in November, 26 cases. But 3 cases were reported in December.

The greatest percentage of cases occurred in children under 5 years of age, especially in those aged 1 or 2 years. A total of 29 cases occurred in Garrett County, of which number 18 occurred in the month of October. In the same month, 17 cases were reported from Baltimore County. Prior to the outbreak, which properly dates from July, three sporadic cases of poliomyelitis had already been reported, two of them in January, and one in February.

Several graphic tables will follow, displaying the poliomyelitis figures by months and counties, by age periods, morbidity rates, etc. Comparative figures for previous years are also shown. From four of the 23 Maryland counties, no cases of sickness from poliomyelitis were reported. These are:—Calvert, Somerset, St. Mary's and Worcester Counties.

POLIOMYELITIS — RURAL MARYLAND — 1916.

	<i>January</i>	<i>February</i>	<i>March</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<i>November</i>	<i>December</i>	<i>Total</i>
Allegany	1	..	1	4	2	..	8
Anne Arundel	1	..	..	..	..	3	9	3	12	12	..	20
Baltimore	1	..	..	..	..	..	2	5	8	17	4	1	38
Calvert
Caroline	1	3	..	..	4
Carroll	1	4	2	4	1	12
Cecil	1	..	..	..	..	..	..	..	..	..	..	..	1
Charles	1	1	..	..	..	2
Dorchester	1	..	2	..	3
Frederick	3	..	..	1	4
Garrett	2	6	18	3	..	29
Harford	1	..	..	..	..	1
Howard	1	1	2	..	1	..	5
Kent	1	..	1
Montgomery	1	3	..	..	..	4
Prince George's	4	..	..	..	..	4
Queen Anne's	1	..	1
Somerset
St. Mary's
Talbot	1	3	..	4
Washington	1	1	2	..	..	4
Wicomico	2	..	..	..	..	2
Worcester
Total.....	2	1	..	..	..	..	7	28	33	47	26	3	147

AGE INCIDENCE OF POLIOMYELITIS — MORBIDITY — 1916.

<i>Months</i>												<i>Years</i>																			<i>Age</i>		
-3	3-6	6-12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-24	25-29	30-34	35-39	<i>Unknown</i>							
Counties ...	2	2	9	27	30	14	15	13	3	9	4	3	2	1	1	1	3	1	1	0	0	3	0	1	1	1	1	1					
Balto. City.	7	8	22	42	51	25	15	8	5	3	2	3	1	0	0	2	0	0	2	1	0	0	2	0	0	0	7	7					
State	9	10	31	69	81	39	30	21	8	12	6	6	3	1	1	3	3	1	3	1	0	0	5	0	1	1	8	8					

POLIOMYELITIS — 1916.

	<i>No. Cases</i>	<i>Morbidity Per 10,000 Pop.</i>	<i>Deaths</i>	<i>Mortality Per 100,000</i>
Allegany	8	1.18	3	4.42
Anne Arundel	20	5.06	5	12.65
Baltimore	38	2.67	18	12.65
Calvert	0	0.00	0	0.00
Caroline	4	1.90	0	0.00
Carroll	12	3.53	3	8.83
Cecil	1	0.43	0	0.00
Charles	2	1.28	0	0.00
Dorchester	3	1.03	2	6.87
Frederick	4	0.75	1	1.88
Garrett	29	13.41	9	41.63
Harford	1	0.36	0	0.00
Howard	5	3.18	2	12.72
Kent	1	0.63	1	6.32
Montgomery	4	1.21	0	0.00
Prince George's	4	1.00	0	0.00
Queen Anne's	1	0.63	0	0.00
Somerset	0	0.00	0	0.00
St. Mary's	0	0.00	0	0.00
Talbot	4	2.09	2	10.43
Washington	4	0.76	1	1.90
Wicomico	2	0.68	0	0.00
Worcester	0	0.00	0	0.00
Total for Counties.....	147	1.90	47	6.08
Baltimore City	206	3.41	70	11.87
Total for State.....	353	2.59	117	8.58

COMPARISON OF POLIOMYELITIS CASES REPORTED IN BALTIMORE CITY AND THE COUNTIES OF MARYLAND FROM
1910 TO 1916, INCLUSIVE.

<i>Years</i>	1910	1911	1912	1913	1914	1915	1916
Counties	33	12	32	9	12	40	147
Baltimore City .....	..	..	25	2	1	26	206

III.—SANITARY SURVEYS AND INVESTIGATIONS.

A summary of the most important sanitary surveys and investigations made in 1916 under the direction of this Bureau will next be given arranged in chronological order. Space will not permit the inclusion of much of the investigative work of the Deputy State Health Officers.

In January an investigation was made of the scarlet fever situation at the Industrial School for Colored Girls at Melvale, Baltimore County. The origin of the disease was thought to have been Havre de Grace, Harford County, but after further study extending to that town this was decided in the negative.

In January an investigation was made of an outbreak of diphtheria in Chestertown, Kent County. The spread of the disease was attributed to failure of physicians to take cultures for diagnosis and termination of quarantine.

In January a report was received from Baltimore City of a case of scarlet fever which was thought due to infection brought from the Mute School in Frederick. On inspection of this school about 40 cases of scarlet fever were found. The disease was quickly controlled by proper isolation.

In February an investigation was made of the scarlet fever situation at St. John's College, Annapolis. Six cases of the disease were found. School was closed, and carefully disinfected.

On March 3rd an investigation of scarlet fever was made in the Home for Orphan and Friendless Children, Hagerstown, Washington County. This was in compliance with the request of the County Health Officer, who was also physician to the institution. Only two or three cases of scarlet fever were found and no further cases developed.

On March 18th notice was received of eight cases of diphtheria in the Kernan Hospital for Crippled Children. Investigation proved that these were not clinical cases, but that cultures were positive for Klebs-Loeffler bacilli on laboratory examination. The condition was found on inquiry to be not uncommon in the institution. Consequently chronic carriers were suspected and the physician in charge was advised that all diseased tonsils and adenoids should be removed from the children of the hospital. This recommendation was carried out and the positive throats have been eliminated from the institution.

On April 12th an investigation was made of suspected smallpox in Salisbury, Wicomico County. This was in compliance with the request of the town and County Health Officer. Twelve cases of smallpox were found. Following the advice of the State Board of Health, the town councils ordered compulsory vaccination of its citizens. No new cases developed.

On June 30th an investigation was made of 22 reported cases of measles at St. Mary's Orphan Asylum, Baltimore County. It was found that the disease had been prevalent in the institution for several months, but because of ignorance of the law by the superintendent, they were not reported.

On September 8th-28th an investigation was made of the sanitary conditions of Betterton, Kent County. This was the result of information received from the Pennsylvania Board of Health that nine cases of typhoid fever in Philadelphia were thought to have originated in this Maryland summer resort. Poorly protected wells, and open privies were found. Sewage from two hotels emptied on the bathing beach. It was recommended to the Board that a public water supply and complete sewerage system should be ordered installed.

July — Investigation of sanitation at homes on the watershed of the Hagerstown water supply. Sanitary improvements ordered on thirty-five properties were satisfactorily made.

September 29th — Investigation of malaria in vicinity of Collins Cannery, at North Wales, where about 50 cases of the disease had developed. Source of infection was traced to a woman from Alabama who had been suffering with intermittent fever for two years. Type of infection was tertian. Anopheles mosquitoes were found breeding on the island.

November — Investigation of nine typhoid fever cases in children attending the Shelltown School, Somerset County. Inspection showed no privies for either sex, and no drinking water supply on the premises. Water was obtained from an open well on property of a man sick with typhoid fever at the time of the investigation. The above conditions were taken up with the school trustees and improvements were made.

SURVEYS.

HAVRE DE GRACE, HARFORD COUNTY.

Homes visited	724
Homes connected with sewers.....	221
Homes not connected with sewers.....	503
Wells in town examined.....	63

Sewer lines accessible to majority of homes. Public water supply. Plans for a complete sewerage system had been prepared.

BEL AIR, HANFORD COUNTY.

Homes inspected	204
Homes connected with cesspools.....	71
Homes with outside surface privies.....	133
Public water supply in general use. No sewerage system.	

ELKTON, CECIL COUNTY.

Homes inspected	582
Homes connected with sewer.....	177
Homes not connected with sewer.....	405
Sewer lines accessible to majority of homes. Public water supply unsatisfactory.	

RISING SUN, CECIL COUNTY.

Homes inspected	161
Homes connected with cesspools.....	10
Homes with outside surface privies.....	151
No sewerage system. Public water supply.	

PORT DEPOSIT, CECIL COUNTY.

Homes inspected	193
Homes connected with sewer.....	54
Homes not connected with sewer.....	139
Public water supply is satisfactory.	

CHESAPEAKE CITY, CECIL COUNTY.

Homes inspected	199
Homes connected with cesspools.....	20
Homes having outside privies.....	177
Homes having no outside privies.....	2
No public water supply or sewerage system.	

BRADDOCK HEIGHTS, FREDERICK COUNTY.

Homes inspected	84
Homes connected with cesspools.....	73
Homes with private sewers.....	2
Homes having outside privies.....	8
Public water supply is in general use. Orders were served where sanitary improvements were found advisable.	

CHESTERTOWN, KENT COUNTY.

Homes inspected	828
Homes connected with sewer.....	193
Homes with outside privies.....	288
Public water supply is in general use.	

IV.—PUBLIC HEALTH CONDITIONS BY COUNTIES.

The State of Maryland is arbitrarily divided into two public health jurisdictions, the one composed of Baltimore City alone, the other comprising the State of Maryland, exclusive of Baltimore City. The former has an area of 31.64 square miles, with an estimated (1916) population of 589,623, the latter, the special province of the State Department of Health, has an area of

great improvements are in evidence, especially in the sanitary conditions. With a view to insuring better compliance with our sanitary inspection law, repeated inspections were made of the crab and oyster establishments at Bellevue, Bishop's Head, Cabin Creek, Cambridge, Claiborne, Crisfield, Fishing Creek, Hooper's Island, Oxford, Secretary, Smith's Island, St. Michael's, Tilghman's Island and Toddville. Samples of shell and shucked stock were also taken at different points for bacteriological examination, and as in 1915 the numerical valuation was made in accordance with the scoring method of the American Public Health Association and the Department of Agriculture at Washington. The result of these examinations will appear in the table below, and special attention is called to the fact that, while in the majority of cases the score for isolated colon bacillus runs much higher in shucked oysters than in shell stock, as would naturally be expected, in 14 cases the reverse conditions were found. The only explanation possible for such anomalous conditions is that thorough washing and perhaps use of the blower deprived the shucked oysters of their original contamination.

In three cases at Crisfield it became necessary to institute prosecutions against oyster packers for floating oysters in water over night; convictions were secured and a fine of \$10.00 and costs imposed in each case.

In October, 1916, at the request of the Conservation Commission of Maryland a set of special rules and regulations governing the operation of oyster shucking and packing houses was issued by this department in conjunction with the Secretary of the Board of Health. Copies of these rules were promptly placed in the hands of all the oyster shuckers and packers and it is hoped that in the coming year better results will be obtained. A copy of the rules and regulations promulgated follows:—

RULES AND REGULATIONS GOVERNING THE OPERATION OF OYSTER SHUCKING AND PACKING HOUSES.

1. Every building or room used as a shucking house shall be constructed and equipped as hereinafter provided and the operations carried on in such building or rooms shall be conducted in such a manner that the purity and wholesomeness of the shellfish handled therein shall not be impaired.

2. All rooms in which shucked oysters are packed, stored, washed or otherwise handled shall be separate and apart from the rooms in which oysters are opened.

3. Rooms in which oysters are shucked and in which shucked oysters are packed shall be provided with floors which can be

readily cleansed, and such floors must be cleansed daily. Side-walls and ceilings shall be kept in a clean condition at all times. Whenever and wherever new rooms are provided in which oysters are to be shucked or packed, the same shall be provided with smooth, water-tight floors and the side walls of such rooms shall be constructed of smooth, hard material.

4. All shucking houses shall be adequately lighted and ventilated, and shall be provided with an abundant supply of water.

5. All shucking houses shall be provided with adequate drainage to lead all waste liquids outside of the building and into a suitable sewer or cesspool, or to some other point where they can be disposed of without creating a nuisance. Waste liquids must not be disposed of by emptying into any stream in which shellfish are grown or floated.

6. Shucking benches constructed of material which can be readily cleansed must be provided, and such benches shall be kept in a clean condition.

7. All utensils and containers in which shucked oysters are placed must be of such material and construction as will enable them to be readily cleansed. They must be thoroughly cleansed and then scalded with hot water or steam before beginning each day's work. Knives used by shuckers must be subjected to the same treatment.

8. Shucked oysters may be washed with clean, unpolluted water for a period not in excess of ten (10) minutes. The soaking of shucked oysters is prohibited.

9. A solid pack shall be required when shucked oysters are sold by measure. For the purpose of this rule a solid pack will be understood to mean oysters which have been drained substantially of all their adhering liquor.

10. Shucked oysters offered for shipment must be packed in closed containers and thoroughly iced. Oysters must not be packed in contact with ice.

11. Oysters must be shipped the same day they are opened, unless stored at a temperature of 45 degrees Fahrenheit or below, or packed in shipping containers and thoroughly iced.

12. Cans in which shucked oysters are shipped must not be used a second time for this purpose unless thoroughly scalded.

13. Waste materials must not be permitted to accumulate in rooms where shucked oysters are packed and such materials must be removed daily.

14. All shucking houses shall be provided with running water, soap and clean towels to enable employees to wash their hands. Employees shall be required to wash their hands before beginning work and after visiting the toilet.

15. The outer clothing worn by persons engaged in shucking oysters shall be of material which can be readily cleansed and only clean garments shall be worn.

16. No person with infected wounds on the hands or arms shall be permitted to open oysters nor handle the same.

17. No person afflicted with any communicable disease shall be employed in any shucking house nor shall any person so affected be permitted to enter the rooms of such shucking house, where oysters are opened, packed or otherwise handled.

18. No person shall be allowed to live or sleep in any packing house where oysters are shucked or packed.

JOHN S. FULTON, Secretary,
State Board of Health.

CHAS. CASPARI, JR.,

Commissioner of Food and Drugs.

Baltimore, Md., October 2, 1916.

OYSTERS EXAMINED IN 1916.

<i>Name and Locality</i>	<i>Score for Isolated Colon Bacillus</i>
M. M. Allen, Oxford, Md.	
Oysters in shell from Lower Tred Avon, Md.....	1
Shucked oysters from Lower Tred Avon, Md.....	1.66
Andrews & Woolford, Cambridge, Md.:	
Oysters in shell from Choptank River, Md.....	23
Shucked oysters from Choptank River, Md.....	210
J. J. Brittingham & Co., Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	200
Shucked oysters from Potomac River, Md.....	1,850
Jno. Byrd Oyster Co., Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	31
Shucked oysters from Potomac River, Md.....	1,700
Geo. R. Cank, St. Michaels, Md.:	
Oysters in shell from Kent Island, Md.....	1
Shucked oysters from Kent Island, Md.....	31
W. T. Cullen & Co., Crisfield, Md.:	
Oysters in shell from Great Wicomico, Md.....	1
Shucked oysters from Great Wicomico, Md.....	165
Geo. A. Christy, Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	0
Shucked oysters from Potomac River, Md.....	100
S. C. Conway, Oxford, Md.:	
Oysters in shell from Tred Avon River, Md.....	0
Shucked oysters from Tred Avon River, Md.....	167
Coulbourn & Jewitt, St. Michaels, Md.:	
Oysters in shell from Chester River, Md.....	120
Shucked oysters from Chester River, Md.....	0
F. G. Elmore & Co., Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	1
Shucked oysters from Potomac River, Md.....	410
D. S. Foote & Co., Baltimore, Md.:	
Oysters in shell from West River, Md.....	11
Shucked oysters from West River, Md.....	5,000
Foster Oyster Co., Crisfield, Md.:	
Oysters in shell from Piney Point, Md.....	0
Shucked oysters from Piney Point, Md.....	0
O. S. Gallup, Oxford, Md.:	
Oysters in shell from Choptank River, Md.....	21
Shucked oysters from Choptank River, Md.....	3,334
W. E. Gibson & Co., Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	110
Shucked oysters from Potomac River, Md.....	2,000
W. L. Gibson & Co., Crisfield, Md.:	
Oysters in shell from Pocomoke Sound, Md.....	0
Shucked oysters from Pocomoke Sound, Md.....	300
Alex. Haddaway, Claiborne, Md.:	
Oysters in shell from Miles River, Md.....	30
Shucked oysters from Miles River, Md.....	35
Jno. T. Handy & Co., Crisfield, Md.:	
Oysters in shell from Ragged Point, Va.....	12
Shucked oysters from Ragged Point, Va.....	3
Oysters in shell from Tangier Sound, Md.....	20
Shucked oysters from Tangier Sound, Md.....	500
J. C. Harrison & Bro., Thiel, Md.:	
Oysters in shell from Punch Island Creek, Md.....	0
Shucked oysters from Punch Island Creek, Md.....	16

<i>Name and Locality</i>	<i>Score for Isolated Colon Bacillus</i>
W. T. Hickman & Co., Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	1,002
Shucked oysters from Potomac River, Md.....	200
Hickman & Riggin, Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	20
Shucked oysters from Potomac River, Md.....	0
Oysters in shell from mouth of Potomac River.....	1
Shucked oysters from mouth of Potomac River.....	0
J. Langrall & Bro., Baltimore, Md.:	
Oysters in shell from Potomac River.....	211
Shucked oysters from Potomac River, Md.....	30
I. W. Lawson & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	1
Shucked oysters from Potomac River.....	0
Lawson & Evans, Crisfield, Md.:	
Oysters in shell from Tangier Sound, Md.....	0
Shucked oysters from Tangier Sound, Md.....	0
Ledge Rock Oyster Co., Crisfield, Md.:	
Oysters in shell from Pocomoke Sound.....	0
Shucked oysters from Pocomoke Sound.....	0
N. R. Lockerman & Co., Crisfield, Md.:	
Oysters in shell from Potomac River, Md.....	0
Shucked oysters from Potomac River.....	100
C. A. Lockerman, Crisfield, Md.:	
Oysters in shell from Potomac River.....	0
Shucked oysters from Potomac River.....	110
Mace, Woolford & Co., Cambridge, Md.:	
Oysters in shell from Choptank River, Md.....	50
Shucked oysters from Choptank River.....	1
Maddix & Dryden, Crisfield, Md.:	
Oysters in shell from Point Lookout, Md.....	0
Shucked oysters from Point Lookout.....	1
E. T. Marshall & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	10
Shucked oysters from Potomac River.....	165
C. W. Martin & Co., Annapolis, Md.:	
Oysters in shell from Hackett's Point, Md.....	12
Shucked oysters from Hackett's Point, Md.....	200
Oysters in shell from Hackett's Point, Md.....	1
Shucked oysters from Hackett's Point.....	50
Oysters in shell from Hackett's Point.....	2
Shucked oysters from Hackett's Point.....	35
Sherwood Packing Co., Sherwood, Md.:	
Oysters in shell from Poplar Island.....	1
Shucked oysters from Poplar Island.....	167
Tawes & Adams, Crisfield, Md.:	
Oysters in shell from Choptank River.....	20
Shucked oysters from Choptank River.....	165
Millbourne & Co., Crisfield, Md.:	
Oysters in shell from St. Mary's River.....	101
Shucked oysters from St. Mary's River.....	100
Vance W. Miles, Crisfield, Md.:	
Oysters in shell from Mobjack Bay.....	1,010
Shucked oysters from Mobjack Bay.....	0
J. H. Phillips & Co., Cambridge, Md.:	
Oysters in shell from Potomac River.....	4
Shucked oysters from Potomac River.....	2

L. B. Phillips & Co., Cambridge, Md.:	
Oysters in shell from Honga River.....	2
Shucked oysters from Honga River.....	3
J. J. Phillips, Cambridge, Md.:	
Oysters in shell from Potomac River.....	14
Shucked oysters from Potomac River.....	1,200
J. Pruitt & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	0
Shucked oysters from Potomac River.....	2,000
D. Q. Riggins & Co., Crisfield, Md.:	
Oysters in shell from Tangier Sound.....	0
Shucked oysters from Tangier Sound.....	20
J. H. Riggins & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	21
Shucked oysters from Potomac River.....	11
Riggins & Bro., Crisfield, Md.:	
Oysters in shell from Potomac River.....	0
Shucked oysters from Potomac River.....	101
Ralph Riggins & Bro., Crisfield, Md.:	
Oysters in shell from Tangier Sound.....	0
Shucked oysters from Tangier Sound.....	0
Somerset Sea Food Co., Crisfield, Md.:	
Oysters in shell from Tangier Sound.....	111
Shucked oysters from Tangier Sound.....	0
A. G. Sterling, Crisfield, Md.:	
Oysters in shell from Tangier Sound.....	0
Shucked oysters from Tangier Sound.....	101
J. L. Sterling & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	11
Shucked oysters from Potomac River.....	100
Sterling & Lawson, Crisfield, Md.:	
Oysters in shell from St. Mary's River.....	110
Shucked oysters from St. Mary's River.....	0
A. G. Stirling & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	0
Shucked oysters from Potomac River.....	3,500
Jas. H. Stirling, Crisfield, Md.:	
Oysters in shell from Potomac River.....	0
Shucked oysters from Potomac River.....	12
Taves & Co., Crisfield, Md.:	
Oysters in shell from Pocomoke Sound.....	0
Shucked oysters from Pocomoke Sound.....	110
Fred Thornton & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	100
Shucked oysters from Potomac River.....	16
Tilghman Packing Co., Tilghman's Island:	
Oysters in shell from Choptank River.....	12
Shucked oysters from Choptank River.....	2,000
Tubman, Mills Co., Cambridge, Md.:	
Oysters in shell from Patuxent River.....	5
Shucked oysters from Patuxent River.....	210
G. S. Tull & Co., Crisfield, Md.:	
Oysters in shell from Potomac River.....	1,400
Shucked oysters from Potomac River.....	16
G. S. Tull & Co., Crisfield, Md.:	
Oysters in shell from Tangier Sound.....	12
Shucked oysters from Tangier Sound.....	20

Tull & Gibson, Crisfield, Md.:	
Oysters in shell from Colonial Beach.....	0
Shucked oysters from Colonial Beach.....	0
Jerry Valliant, Oxford, Md.:	
Oysters in shell from Choptank River.....	1,110
Shucked oysters from Choptank River.....	167
W. H. Valliant & Bro., Bellevue, Md.:	
Oysters in shell from Annapolis, Md.....	1
Shucked oysters from Annapolis.....	350
J. G. Wagner, Baltimore, Md.:	
Oysters in shell from Piankatank River.....	22
Shucked oysters from Piankatank River.....	3,330
J. G. Wagner, Baltimore, Md.:	
Oysters in shell from York River.....	1,011
Shucked oysters from York River.....	50
Wallace & Quinn, Crisfield, Md.:	
Oysters in shell from Potomac River.....	0
Shucked oysters from Potomac River.....	10
Ward & Landon, Crisfield, Md.:	
Oysters in shell from Potomac River.....	0
Shucked oysters from Potomac River.....	100
J. E. Watkins & Son, St. Michaels, Md.:	
Oysters in shell from Eastern Bay.....	10
Shucked oysters from Eastern Bay.....	16

The examination of canned tomatoes has again received careful attention during the past packing season. Early in the year a copy of the following minimum requirements, based upon the extensive work done by the Chemical Laboratory in 1915, and adopted by the Board as liberal and reasonable, was mailed to every canner of tomatoes in this State, and I am much pleased to be able to report that out of 590 cans examined, 542 or nearly 92% were found to be in conformity with the prescribed requirements.

MINIMUM REQUIREMENTS FOR CANNED TOMATOES.

Adopted by the State Board of Health of Maryland, for the Season of 1916.

Can Contents Pulped—Total solids not less than 5%.

Filtered Juice—..... Specific gravity at 25 degrees C. not less than 1.0190.

Refractometer reading at 20 degrees C. not less than 31.0.

Total solids not less than 4%.

Reducing sugars not less than 2%.

Canned tomatoes shall not contain any living organisms.

Efforts have been made to ascertain the cause of added water in those tomatoes found to be not in conformity with the minimum requirements, and it is probably safe to say that in a majority of cases this water comes from the condensed steam as the cans pass through the exhauster. Changes in the shape of the exhauster cover have been suggested to the canners so as to allow the condensed steam to reach the bottom of the exhauster without coming in contact with the top of the can, and as the canners have promised to make the changes suggested, the results will be watched with interest during the coming packing season. In a few cases it was found that the juice to be added to the tomatoes in the can was heated with open steam coils and lifted by means of a syphon occasionally fed with water; the use of such appliances was ordered to cease.

It is perhaps safe to say that no appreciable number of packers at present persist in adding water to their canned tomatoes, and wherever positive evidence can be obtained that it is done, severe measures must be resorted to, to break up this nefarious practice. The Federal Government has undertaken to investigate carefully the methods and practices of the Maryland tomato canners and as a result a number of cases have been reported to the Department of Justice, which will be brought to trial during the present year.

Samples of canned tomatoes taken from the packs of the following firms failed to meet the requirements laid down by the Board of Health for the season of 1916:

W. F. Applegarth, Golden Hill; Baltimore Canning Co., Baltimore, Md.; G. W. Bennett & Bro., Fishing Island; Booth Packing Co., Baltimore, Md.; Jno. Boyle Co., Baltimore, Md.; F. M. Collins, North Wales, Md.; Dulaney & Hastings, Salisbury, Md.; Geo. W. Elsner, Churchville, Md.; D. E. Foote & Co., Crumpton, Md.; D. E. Foote & Co., Baltimore, Md.; Gibbs Preserving Co., Baltimore, Md.; Green & Reading, Reading Ferry, Md.; L. K. Hackett & Co., Finchville, Md.; H. E. Hanby, Shelltown, Md.; Hanson & Lantz, Edgewood, Md.; O. M. Hignutt, Williston, Md.; Insley & Mitchell, Salisbury, Md.; J. Langrall & Bro., Baltimore, Md.; J. N. Makowski & Son, Glen Burnie, Md.; A. S. Magness, Wilna, Md.; Wm. Numsen & Sons, Inc., Baltimore, Md.; P. D. Phillips & Bro., Greenhill, Md.; Lambert Powell, Parsonsburg, Md.; Preston Canning Co., Preston, Md.; Pusey, Holland & Co., Mt. Vernon, Md.; Roberts Bros., Snow Hill, Md.; R. E. Roberts & Co., Baltimore, Md.; Ross & Williams, Mt. Vernon, Md.; Wm. Ruppert & Sons, Jessups, Md.; Schall Packing Co., Baltimore, Md.; Showell Mfg. Co., Showell, Md.; R. L. Simmons & Co., Andrews, Md.; G. G. Slacum, Wingate, Md.; Southern Packing Co., Baltimore, Md.; Stockton Packing Co., Stockton, Md.; Torsch Packing Co., Baltimore, Md.; Walker Bros., St. Martins, Md.; J. B. Webster & Co., Newport, Md.; Webster Butterfield & Co., Baltimore, Md.; J. C. White, Pittsville, Md.; Wimbrow Bros., Whaleysville, Md.; Winfield Webster & Co., Rhodesdale, Md.; Woolford Packing Co., Baltimore, Md.; W. J. Wright & Son, North Wales, Md.; Royal Oak Canning Co., Quantico, Md.

It is impossible to do full justice to the inspection of the large number of canneries in this State with but one inspector, and unless more liberal provision for financial aid can be secured, this very important work will always be found more or less incomplete and unsatisfactory.

During the year 1916, 261 hearings were held in connection with alleged violations of the Pure Food and Drugs Law as follows: 7 in February; 20 in April; 51 in May; 40 in July; 113 in September; 13 in October and 17 in November.

Besides repeated inspections of markets, stores and wharves in Baltimore City, 541 towns were visited by the inspectors of this department resulting in 8,361 inspections of places where food products are manufactured, stored, or sold, more especially with the view of correcting unsanitary conditions. This does not, of course, include the inspections made by the cannery and dairy inspectors, which are reported upon separately elsewhere.

As shown by the following schedules, 53 prosecutions were instituted under the Pure Food and Drugs Act of 1910, and 10 under the Sanitary Inspection Law of 1914, and I am glad to be able to report that of these all but six were successful; one case is still pending, three cases were dismissed and in two cases the traversers had left the State when the case was called for trial.

LIST OF INSPECTIONS MADE BY THE INSPECTORS IN 1916

General Stores	5,808
Markets	256
Wharves	420
Ice Cream Inspections	105
Terminal Warehouses	5
Drug Stores	19
Railroad Terminals	18
Lunch Rooms	71
Crab Houses	91
Oyster House Inspections.....	423
Inspections under Soft Drink Law.....	1,137
Special Inspections	9
Total.....	8,361

LIST OF PROSECUTIONS BROUGHT UNDER THE FOOD AND DRUGS LAW OF MARYLAND DURING 1916.

<i>City, Town or County</i>	<i>Laboratory No.</i>	<i>Name of Defendant</i>	<i>Date Sample was Purchased</i>	<i>Why Prosecuted</i>	<i>Final Disposition of Case</i>
Centreville	7913	Keating & Feddenum	Jan. 26, 1915	Deficiency of morphine in tincture of opium	Plead guilty; paid fine of \$1 and costs
Federalburg	8294	F. Noble Wright	April 21, 1915	Deficiency of morphine in tincture of opium	Convicted; paid fine of \$1 and costs
Baltimore	8394	W. Wallace Alderson	May 6, 1915	Deficiency of oil of almond in extract of almond	Convicted; paid fine of \$25 and costs
Baltimore	8396	W. Wallace Alderson	May 6, 1915	Deficiency of oil of orange in extract of orange	Convicted; paid fine of \$25 and costs
Baltimore	8565	Katz Bros.	July 29, 1915	Vinegar misbranded; sold as cider vinegar	Settled on payment of costs
Emmitsburg	8790	J. D. Caldwell	Aug. 18, 1915	Vinegar misbranded; sold as cider vinegar	Plead guilty; paid fine of \$5 and costs
Ellicott City	8801	Geo. W. Radcliffe	Aug. 19, 1915	Vinegar misbranded; sold as cider vinegar	Case dismissed by Justice of the Peace
Oakland	8923	H. Creutzburg	Sept. 15, 1915	Deficiency of acetic acid in vinegar	Plead guilty; paid fine of \$5 and costs
Midland	8953	Wm. B. Phillips	Sept. 15, 1915	Vinegar misbranded; sold as cider vinegar	Found not guilty by Court
Midland	8954	Jno. Somerville & Co.	Sept. 15, 1915	Vinegar misbranded; sold as cider vinegar	Found not guilty by Court
Union Bridge	9063	J. J. Six	Sept. 28, 1915	Deficiency of acetic acid in vinegar	Plead guilty; paid fine of \$5 and costs
Heberville	9116	Wm. F. Piel	Oct. 6, 1915	Vinegar misbranded; sold as cider vinegar	Dismissed for want of suffi- cient evidence
Easton	9136	S. G. Carroll	Oct. 4, 1915	Vinegar misbranded; sold as cider vinegar	Convicted; paid fine of \$1 and costs
Easton	9141	Brown & Poney	Oct. 4, 1915	Vinegar misbranded; sold as cider vinegar	Plead guilty; paid fine of \$1 and costs
St. Michaels	9163	T. E. Harrison	Oct. 6, 1915	Deficiency of acetic acid in vinegar	Convicted; paid fine of \$10 and costs

<i>City, Town or County</i>	<i>Laboratory No.</i>	<i>Name of Defendant</i>	<i>Date Sample was Purchased</i>	<i>Why Prosecuted</i>	<i>Final Disposition of Case</i>
Cambridge	9178	C. J. Webb	Oct. 7, 1915	Vinegar misbranded; sold as cider vinegar	Plead guilty; paid fine of \$1 and costs
Salisbury	9232	W. S. McCully	Oct. 7, 1915	Vinegar misbranded; sold as cider vinegar	Plead guilty; paid fine of \$5 and costs
Ford's Store	9272	T. J. Melvin	Oct. 13, 1915	Vinegar misbranded; sold as cider vinegar	Plead guilty; paid fine of \$5 and costs
Millersville	9309	W. M. McKnew	Oct. 13, 1915	Vinegar misbranded; sold as cider vinegar	Convicted; paid fine of \$5 and costs
Parsonsburg	9354	J. M. Parsons	Oct. 13, 1915	Deficiency of acetic acid in vinegar	Dismissed by Justice of the Peace
Baltimore	9383	Frederick Lambden	Oct. 19, 1915	Deficiency of aspirin in aspirin tablets.	Settled on payment of costs
Still Pond	9411	G. W. Covington	Oct. 19, 1915	Vinegar misbranded; sold as cider vinegar	Plead guilty; paid fine of \$5 and costs
Baltimore	9438 9442	Wm. H. Wickham	Oct. 22, 1915	Presence of saccharin in soft drinks	Plead guilty; paid fine of \$10 and costs
Baltimore	9443 9449	L. E. Albert	Oct. 22, 1915	Presence of saccharin in soft drinks	Plead guilty; paid fine of \$10 and costs
Baltimore	9452	Bernalheimer Bros.	Oct. 26, 1915	Adulteration of oysters with water	Plead guilty; paid fine of \$250 and costs
Baltimore	9495	Associated Drug Stores	Oct. 27, 1915	Deficiency of aspirin in aspirin tablets	Traversers left the State
Baltimore	9497	Garden Pharmacy	Oct. 27, 1915	Deficiency of aspirin in aspirin tablets	Settled on payment of costs
Baltimore	9502	Associated Drug Stores	Oct. 27, 1915	Deficiency of aspirin in aspirin tablets	Traversers left the State
Baltimore	9519	Jno. C. Krantz	Oct. 29, 1915	Deficiency of aspirin in aspirin tablets	Grand Jury failed to act in the case
Thb	9572	H. B. Burroughs	Oct. 29, 1915	Vinegar misbranded; sold as cider vinegar	Plead guilty; paid fine of \$5 and costs
Baltimore	9590	McQuibbin Drug Co.	Nov. 3, 1915	Deficiency of aspirin in aspirin tablets	Settled on payment of costs

<i>City, Town or County</i>	<i>Laboratory No.</i>	<i>Name of Defendant</i>	<i>Date Sample was Purchased</i>	<i>Why Prosecuted</i>	<i>Final Disposition of Case</i>
Reisterstown	9604	Sweet's Cut Rate Phar.	Nov. 4, 1915	Deficiency of aspirin in aspirin tablets	Plead guilty; paid fine of \$5 and costs
Baltimore	9639	Bernheimer Bros.	Nov. 10, 1915	Adulteration of ground beef with water	Plead guilty; paid fine of \$250 and costs
Baltimore	9666 9670	R. C. Reed	Nov. 17, 1915	Presence of saccharin in soft drinks	Plead guilty; paid fine of \$10 and costs
Havre de Grace	9739 9743	E. C. Kelly	Nov. 22, 1915	Presence of saccharin in soft drinks	Plead guilty; paid fine of \$5 and costs
Baltimore	10101	Bernheimer Bros.	Jan. 18, 1916	Deficiency of hydrogen di- oxide in solution of hydro- gen dioxide	Plead guilty; paid fine of \$25 and costs
Baltimore	10102	H. P. Cohn Co.	Jan. 18, 1916	Deficiency of hydrogen di- oxide in solution of hydro- gen dioxide	Settled on payment of costs
Baltimore	11103	J. Mercer Heard	June 12, 1916	Deficiency of ethyl nitrite in sweet spirit of nitre	Plead guilty; sentence sus- pended
Baltimore	11104	J. Mercer Heard	June 12, 1916	Excess of hydrochloric acid in diluted hydrochloric acid	Plead guilty; paroled on pay- ment of costs
Lonaconing	11364	Myers Drug Store	June 27, 1916	Deficiency of Ethyl nitrite in sweet spirit of nitre	Plead guilty; paid fine of \$5 and costs
Crisfield	11412	C. C. Ward	June 27, 1916	Deficiency of hydrochloric acid in diluted hydrochloric acid	Plead guilty; paid fine of \$1 and costs
Easton	11464	Harry Roberts	June 29, 1916	Deficiency of Aconitine in tincture of aconite	Plead guilty; paid fine of \$1 and costs
Lonaconing	11510	Myers Drug Store	June 27, 1916	Deficiency of Aconitine in tincture of aconite	Plead guilty; paid fine of \$5 and costs
Thurmont	11560	Jas. K. Waters	July 13, 1916	Deficiency of Ethyl nitrite in sweet spirit of nitre	Pending
Trappe	11600	B. H. Craig & Son	July 21, 1916	Deficiency of Ethyl nitrite in sweet spirit of nitre	Fined \$1 and costs

Trappe	11601	B. H. Craig & Son	July 21, 1916	Deficiency of sulphuric acid in aromatic sulphuric acid	Fined \$1 and costs
Trappe	11602	B. H. Craig & Son	July 21, 1916	Deficiency of hydrochloric acid in diluted hydrochloric acid	Fined \$1 and costs
Highlandtown	8874	Mantik Packing Co.	Aug. 10, 1915	Water added to canned tomatoes	Found guilty; paid fine of \$25 and costs
East New Market...	8898	Oliver W. Hubbard	Sept. 6, 1915	Water added to canned tomatoes	Plead guilty; fined \$1 and costs
Crisfield		Tull & Dise	Dec. 5, 1916	Floating oysters in water over night	Paid fine of \$10 and costs
Crisfield		Tyler & Byrd	Dec. 5, 1916	Floating oysters in water over night	Paid fine of \$10 and costs
Crisfield		Taves & Adams	Dec. 5, 1916	Floating oysters in water over night	Paid fine of \$10 and costs
Baltimore		J. Poehlman	Sept. 9, 1916	Butter misbranded; was not designated as process butter	Case dismissed by Grand Jury

PROSECUTIONS BROUGHT UNDER THE SANITARY INSPECTION LAW

New Windsor		Preston B. Roop	Jan. 28, 1916	Unsanitary slaughter house	Fined \$5 and costs
Cambridge		Geo. B. Gillis	July 20, 1916	Unsanitary dairy house	Fined \$1 and costs
Cambridge		W. D. James	July 20, 1916	Unsanitary dairy house	Fined \$1 and costs
Crisfield		Wm. Blades	July 25, 1916	Unsanitary dairy house	Fined \$3 and costs
Crisfield		B. F. Somers	July 25, 1916	Unsanitary dairy house	Fined \$3 and costs
Frostburg		Hartig Bros.	Aug. 4, 1916	Unsanitary slaughter house	Fined \$5 and costs
Ridgely		W. Arthur Senlevy	Oct. 3, 1916	Unsanitary slaughter house	Fined \$5 and costs
Annapolis		J. W. King	Nov. 3, 1916	Unsanitary dairy house	Fined \$5 and costs
Baltimore		Wm. H. Simpson	Nov. 14, 1916	Unsanitary meat store	Fined \$5 and costs
Cambridge		Jno. C. Daily	Jan. 19, 1916	Unsanitary grocery store	Fined \$1 and costs

The following lists show the character and quantity of food and drug products condemned and destroyed by the inspectors of this department during the past year, and also the number of samples of food and drug products not passed after analysis in the chemical laboratory.

CONDEMNATIONS OF FOOD PRODUCTS FROM JANUARY 1, 1915,
TO JANUARY 1, 1916.

Aeonite Tincture	14 fluid ounces
Apples	1 bushel
Apples	888 cans
Beans, String	1,841 cans
Beans, Lima, dried.....	40 lbs.
Beans, Soup, dried.....	60 lbs.
Beef, Corned	105 cans
Bananas	28
Barley	10 lbs.
Bread	164 loaves
Buckwheat	25 lbs.
Cabbage	1 barrel
Cakes, assorted	50 lbs.
Candies, assorted	60 lbs.
Candy, stick	150 lbs.
Cantaloupes	6 crates
Cereals, assorted	75 lbs.
Chow Chow	16 jars
Citron	3 lbs.
Cocoa	22 lbs.
Cocoanut, shredded	75 lbs.
Coffee	105 lbs.
Condiments	38 jars
Corn, damaged	1,296 bushels
Corn	96 cans
Cranberries	1 bushel
Cream of Tartar	3 lbs.
Currants	6 lbs.
Date Butter	35 jars
Farina	4 lbs.
Fish, dried	25 lbs.
Fish, Fresh	21 lbs.
Flour	5 barrels
Flour, prepared	1,414 packages
Hominy	77 lbs.
Iceing	6 lbs.
Jello	648 packages
Kidneys, hog	3
Lentils	5 lbs.
Liver	20½ lbs.
Macaroni	36 lbs.
Meal, Corn	105 lbs.
Meat, mince	35 lbs.
Nutmegs	5 lbs.
Olive Oil	15 bottles
Oranges	3 dozen
Peaches, evaporated	25 lbs.
Peas, split	10 lbs.
Postum	5 lbs.
Potatoes	½ bushel

Potatoes, sweet	9,957 cans
Potato chips	1½ lb.
Preserves	38 lbs.
Prunes, dried	800 lbs.
Pudding	660 lbs.
Rabbits	51
Raisins	3,756 lbs.
Salt	60 lbs.
Sausage	10 lbs.
Spices, assorted	91 lbs.
Starch, Corn	90 lbs.
Sugar	60 lbs.
Teas	70 lbs.
Tomatoes, fresh	4 dozen
Tomatoes	2,497 cans
Tomato Paste	600 cans
Tomato Pulp	170 gallons
Turnips	1½ bushels
Vegetables, assorted	332 cans
Wheat	483 bushels
Yeast Powder	32 lbs.

LIST OF FOOD AND DRUGS NOT PASSED DURING 1916.

<i>Representation</i>	<i>Cause for Rejection</i>
21 samples of Aromatic Sulphuric Acid	Contain excessive amount of Sulphuric Acid.
22 samples of Aromatic Sulphuric Acid	Deficient in Sulphuric Acid.
1 sample Aspirin Tablets.....	Deficient in Aspirin.
1 sample Birch beer.....	Contains saccharin.
40 samples of Butter.....	Misbranded; renovated butter.
8 samples of Butter.....	Adulterated; contain oleomargarine
16 samples of Dilute Hydrochloric Acid	Deficient in Hydrochloric Acid.
20 samples of Dilute Hydrochloric Acid	Contain excessive amount of Hydrochloric Acid.
1 sample Extract of Lemon.....	Deficient in Oil of Lemon.
1 sample Extract of Orange.....	Deficient in Oil of Orange.
1 sample of Ice Cream.....	Deficient in Butter Fat.
2 samples of Lard.....	Contain Cottonseed Oil.
6 samples of Milk.....	Deficient in Butter Fat.
15 samples of Milk.....	Bacteriologically bad.
60 samples of Milk.....	Bacteriologically suspicious.
8 samples of Peroxide of Hydrogen Solution	Deficient in Hydrogen Peroxide.
43 samples of Sweet Spirit of Nitre.....	Deficient in Ethyl Nitrite.
25 samples of Tincture of Aconite.....	Deficient in Aconitine.
48 samples of Canned Tomatoes....	Non-compliance with the minimum requirements fixed by the State Board of Health.
4 samples of Vinegar.....	Sold as rider vinegar, when in reality they were not.

TOWNS VISITED BY FOOD AND DRUG INSPECTORS DURING THE YEAR 1916.

Aberdeen (7), Accident, Adamstown, Annapolis (17), Arlington (6), Ashton, Back River (2), Barton (2), Baynesville (2), Bay View, Belair (8), Bellevue (3), Beltsville, Bengies, Berlin, Berwyn (4), Bethesda, Big Pool, Big Spring, Bishops Head, Bladensburg (2), Boonsboro, Braddock Heights, Bradshaw (2), Branchville, Brooklyn (2), Buckeystown (2), Butler, Calvert, Cambridge (14), Cauton, Carney (2), Catonsville (9), Cavetown, Cecilton, Centerville (4), Chase (2), Chestertown (6), Chewsville, Claiborne (3), Clear Springs, Cockeysville (2), Colgate (2), Conococheague, Cordova, Cowenton (2), Creagerstown, Crisfield (14), Cub Hill, Cumberland (7), Curtis Bay (2), Delight, Denton (3), Detour, Downes, East New Market (2), Easton (10), Eastport (2), Eckhart, Edgemere, Elkton (6), Ellicott City (9), Emmittsburg (3), Ewell, Federalsburg (5), Fishing Creek (5), Forks (2), Fort Howard, Franklinville (2), Frederick (9), Frostburg (4), Fullerton (2), Funkstown (2), Gaithersburg (2), Gardenville (2), Garrison, Glen Arm (2), Glyndon (2), Golden Hill, Golden Ring, Goldsboro (2), Govans (6), Graceham, Grange, Greeneboro, Hagerstown (10), Halfway, Halls, Hamilton (5), Hampstead (6), Hancock (4), Havre de Grace (8), Highlandtown, Hillsboro, Hombergville, Hoopers Island (5), Hoyes, Hurlock, Hyattsville (9), Hyde (2), Indian Springs, Irvington, Jerusalem, Keedysville, Kensington (2), Kingsville (4), Kitzmillersville, Lakeland, Lauraville (4), Laurel (4), Leeland, Lisbon, Lonaconing (3), McHenry, Manchester (5), Middle River (2), Middletown (2), Midland (3), Mitchellsville, Mt. Airy (2), Mt. Vernon (1), Muirkirk, Neavitt (2), New Market (3), New Midway, New Windsor (4), North East (6), Oakland (5), Ocean City (2), Overlea (3), Owings Mills (3), Oxford (3), Parkville (2), Pearl, Perry Hall, Perryman, Perryville (3), Philadelphia Road, Pikesville (4), Pleasant Hill, Pocomoke City (2), Poplar Heights, Port Deposit (4), Preston, Princess Anne (5), Queen Anne, Raspeburg (2), Reisterstown (4), Ridgely (3), Ridgeville (2), Rising Sun (2), Riverdale (2), Rock Point, Rockville (3), Rocky Ridge, Roland Park, Rossville (2), Royal Oak, Sabillasville, St. Helena (2), St. Michaels (8), Salisbury (5), Sanitorium, Security, Sharptown, Shawan, Sherwood, Smith Spring, Snow Hill (4), Sparrows Point (2), Sudlersville, Sykesville (2), Taneytown (2), Taylors Island (5), Thiel, Thurmont (4), Tilghman (2), Tilghman's Island (3), Toddville (3), Towson (17), Trappe, Turners Station (2), Tylerton, Union Bridge (3), Upper Falls (2), Upper Marlboro, Walkersville (2), Waverly, Westernport (4), Western Run, Westminster (11), Williamsport (2), Wingate (3), Woodsboro (2), Worton, Zion.

It is most unfortunate that our efforts, supported by those of the Maryland Cannery Association, to secure an appropriation from the 1916 Legislature of the State, for continued and enlarged work under the Sanitary Inspection Law, proved unsuccessful and under such conditions the work undertaken for the betterment of the canning and dairy industries of the State becomes more or less crippled.

The separate reports of the meat inspector, cannery inspector and dairy inspector will be found hereto attached.

Respectfully,

CHAS. CASPARI, JR.

State Food and Drug Commissioner.

Baltimore, March 5, 1917.

REPORT OF MEAT INSPECTOR FOR THE YEAR 1916.

Inspected at slaughter houses and abattoirs—Cattle, 93,002; Calves, 35,734; Sheep, 132,594; Hogs, 211,154.

Visited 2,450 slaughter houses.

Condemned:

Sheep	11
Calves	53
Hogs	18
Cows	10
Tubercular beef	18,706 lbs.
Beef Tripe	17,300 lbs.
Sausage Meat	11,200 lbs.
Mutton	250 lbs.

CHAS. N. NUTTEN, Inspector.

REPORT OF VETERINARIAN AND DAIRY INSPECTOR.

DR. CHAS. CASPARI, JR.,

State Food and Drug Commissioner,

16 W. Saratoga Street, Baltimore, Md.

Dear Sir:—

Herewith I beg to submit my report for the twelve months ending December 31, 1916.

The number of inspections made in 1916 was considerably less than in 1915; this is due to the fact that wherever insanitary conditions were met with during the past year, orders were immediately issued for correction of the same, and reinspections followed as soon as possible after the expiration of the time order. This of course necessitated visits first to one part of the State and then to another. Better results followed and less ground was covered.

Regarding the dairy farms, it must be self evident that it is almost impossible to thoroughly examine the cattle on every farm, for at times they are a mile away at pasture and a casual inspection is all that can be made; however where any suspicion of diseased cattle existed, these were brought into the stable and given a thorough examination. You can readily see that udder trouble may frequently exist and not be detected unless one is able to palpate the udder, which is impossible while the cattle are at pasture.

The report on toilets on the dairy farms does not show the good results anticipated after my visit in 1915; while many toilets were built or remodeled to comply with the State Board of Health requirement, many parts have been neglected and hinges on the lids of the seats were found broken, cans were found overflowing and screens in the rear of the trap door broken or rusted. Such toilets were marked as "D" types.

A large majority of the dairymen of the State are beginning to understand the Board's requirements and have complied with the same, but quite a few neglect to maintain these requirements at all times. Five men were prosecuted for violation of the Sanitary Inspection Law. Considerable complaint is made about farmers whose establishments have not been inspected, but who manufacture and sell butter, and others who sell milk to creameries and to milk plants. I can see but one way to remedy this condition, and that is the employment of a sufficient number of inspectors. If the money for such additional inspectors cannot be obtained by legislative appropriation, I would suggest that a considerable sum of money could be made available by compelling every man in the State who sells milk, cream or butter to apply for a permit at a charge of \$1.00 each.

I have found that there are approximately 38,000 persons selling these dairy products in the State of Maryland. A temporary permit could be given until the place has been inspected, which could be revoked, if upon inspection the farm was found to be in an insanitary condition. More specific regulations should, of course, be promulgated, so that every one would be definitely informed as to requirements. One trouble which I encounter under the Sanitary Inspection Law is that some persons interpret the law differently from others, and will go even so far as to make a test case in court.

Very little complaint can be made about the slaughter houses thus far visited. All those that have been inspected know the requirements and practically all comply. There has been a wonderful improvement in the sanitary condition of slaughter houses throughout the State, the only trouble being that diseased cattle are often killed and sold for food purposes, since it is impossible for an inspector to be at all these places while slaughtering is going on, and I am unable at present to see any way of correcting this dangerous practice.

SUMMARY OF WORK CARRIED ON IN 1916.

Number of dairy farms inspected.....	37
Number of reinspections of dairy farms.....	205
Number of slaughter houses inspected.....	15
Number of reinspections of slaughter houses.....	97
Special Inspections	56
Total number of inspections.....	410
Number of samples of milk brought to chemical laboratory.....	265
Number of samples of milk brought to bacteriological laboratory....	246
Number of cattle examined.....	1,933
Number diseased	10

Name of disease (4 Tb) (3 Mammitis) (1 Actinomycosis) (1 Parotid Abscess) (1 Chronic Coxitis).	
Character and number of toilets (A83 (B2) (D75) (E39) No toilet, 3.	
Number of written notices served on dairymen.....	73
Number of written notices served on butchers.....	43
Total number of written notices served.....	116
Total number that have complied with these notices.....	61
Not reinspected since notices were sent (40 recently sent).....	55
Number of prosecutions (5 dairymen) (3 butchers) (1 store).....	9
Total fines with costs	\$45.85
Condemnations (2 cows with Tb) ($\frac{1}{4}$ carcass bruised) (1 hog, Ieterus) and 7 rabbits.	

Respectfully submitted,

W. B. BILLINGSLEY,

Veterinarian and Dairy Inspector.

February 1, 1917.

REPORT OF THE CANNERY INSPECTOR.

CHAS. CASPARI, JR.

*State Food and Drug Commissioner,
Baltimore, Md.*

Dear Sir:—

I beg to submit herewith my report for the twelve (12) months ending December 31, 1916.

There are in the State of Maryland 516 canneries, which were visited by me one or more times during the year: of these, 468 were in operation, 35 remained idle and 13 had been dismantled.

During the year there were built in this State 17 new canning houses, 7 of which are large up-to-date plants, equipped with improved and modern sanitary machinery, special attention in their construction having been paid both to the keeping of the cannery and its surroundings in a clean and sanitary condition and to the hygienic housing of the help. These canneries are all that could be desired.

Of the canneries in operation during the past year, 13 were located in Anne Arundel County, 44 in Baltimore City, 6 in Baltimore County, 1 in Calvert County, 55 in Caroline County, 20 in Carroll County, 12 in Cecil County, 5 in Charles County, 49 in Dorchester County, 9 in Frederick County, 91 in Harford County, 16 in Kent County, 4 in Prince George's County, 1 in Montgomery County, 15 in Queen Anne's County, 12 in St. Mary's County, 5 in Washington County, 29 in Somerset County,

25 in Talbot County, 41 in Wicomico County, and 15 in Worcester County.

The inspection of the sanitary conditions of these canneries show that it has not yet been possible to secure complete compliance with the requirements of the Sanitary Inspection Law, and it became necessary again to send out notices to a number of canners directing them to make certain changes and improvements in their plants as follows:

Floors	21 cases
Washing facilities	26 cases
Toilets	77 cases
Living Quarters	3 cases
Boxes for Tomato Skins.....	20 cases
Platform for loading skins.....	37 cases
Daily removal of skins.....	16 cases
Drainage to be corrected.....	47 cases
Insanitary surroundings	11 cases
Floors to be kept clean.....	5 cases
Requiring help to wear caps.....	29 cases
Syrup room to be screened.....	1 case
Platform to load corn cobs.....	1 case

On account of the insanitary and filthy condition found either in the cannery or its surroundings, or both, the following establishments were closed temporarily until the necessary improvements were made.

G. L. Jump at Queen Anne; Mantik Packing Co. at Old Point; J. C. White, Salisbury; H. N. Messiek, Quantico; Hopkins & Siegert, Gallo-ways; Johnson & Dryden, Pocomoke City; Wm. P. Andrews, Crapo; Chas. S. Bradley, Fowling Creek.

In the course of examination of many lots of canned goods during the past year, it became necessary to condemn and destroy 16,094 cans of such goods, including sweet potatoes, tomatoes, string beans, corn, assorted vegetables and apples. Fourteen thousand, nine hundred and seventy-six (14,976) No. 1 cans of tomato pulp were seized on account of insufficient concentration, and were finally released under affidavit for conversion into catsup; 15,312 No. 2 cans of tomatoes were seized on account of shortage of weight, but were released subsequently, after having been properly labeled, showing the deficiency; 1,368 No. 2 cans of corn were seized because below standard and subsequently released after having been properly labeled; 19,440 No. 1 cans of tomato pulp were seized on account of inferior quality and the case is now in litigation.

During the packing season of tomatoes special attention was given to the manner in which the fruit was handled and packed, and also to the possible adulteration by addition of water. When a cannery was found in operation the following information was obtained.

Date.....

Place..... *Name*.....

Date packed..... *Condition of fruit*.....

How filled..... *Juice added*.....

Salt added..... *Juice strained*.....

Juice boiled, or not boiled.....

If boiled, How?—Dry steam, Open steam, Jacket kettle.....

Is open steam used in any part of the packing?.....

Where

Remarks. How long processed.....

.....*Inspector.*

And in addition if the juice was drained, note was made as to how it was heated and how it was put into cans. The cans were marked and watched by me from the time they were filled, closed and entered the processor, after which they were marked and labeled as above; it required about an hour and fifteen minutes at each cannery for the taking of these samples. If the cannery was found to be not in operation, two or more cans were taken from stock at each place visited and were labeled as to the probable date of packing.

Nine hundred and forty-one samples were taken from 385 different canneries throughout the State and turned over to the Chemical Laboratory for examination.

The subject of sanitary toilets for country canneries is an all important one and deserves further careful attention. The plan heretofore suggested does not meet the requirements for the reason the buckets are allowed to overflow, the wire screening is broken or rusts, the seats are knocked off, and the whole house, especially the back door, becomes warped during the nine months when not in use, and is not fly proof. Houses built over concrete pits on the plan suggested by the Bureau of Sanitary Engineering seem better in every way and nearly all canners prefer to build them. At the present time there are about fifty toilets of this type in the State, which give excellent satisfaction.

I would also recommend that the use of an open steam coil for boiling tomato juice and of a steam syphon to lift the latter be condemned.

Respectfully submitted,

A. K. BEASLEY,
Cannery Inspector.

Baltimore, Feb. 15, 1917.

REPORT OF THE BUREAU OF SANITARY ENGINEERING

1916

ROBERT B. MORSE, Chief Engineer

GENERAL STATEMENT

The Bureau of Sanitary Engineering has continued in operation during the year under the provisions of the water supply and sewerage law, Chapter 810 of the Acts of 1914. Under this law the State Board of Health is given general supervision and control over the water supply, sewerage and refuse disposal systems of the State, and the sanitary condition of the State's waters. The organization of the Bureau, which was developed in 1914 and 1915, has been expanded during the present year. The four geographical engineering districts established in 1914 were all in full operation with a resident engineer in charge of each. This has made possible the extension of activities to more sections of the State than could be previously visited, on account of either remoteness of location or insufficiency of engineering force.

The number of employees totalled nineteen. Work was carried on under three divisions—office, field, and surveys and construction. The office division reviewed plans which were presented for approval, designed water and sewerage works for State institutions, made general studies for municipal improvements, and carried on the clerical work; the field division made sanitary surveys and field investigations, collected samples and conferred with municipal officials; and the division of surveys and construction collected the necessary information for designing improvements at the State institutions, and constructed them from the plans that were prepared in the office.

The investigations during the year have included work in connection with the examination and approval of plans for water and sewerage systems, routine field examinations of existing systems, including the collection of samples from public water supplies, special investigations relating to questions of nuisance caused by stream pollution, and sanitary surveys in a number of communities.

It is and always has been the policy of this office to lend as much assistance as possible to towns where water and sewerage improvements are projected, and to that end it has made studies, preliminary plans and estimates of cost for complete systems or extensions to existing works, so that a stimulus might be given to such improvements. It has been found that such work is generally productive of results which in the end justify the original expense, for many towns desiring to commence a program of sanitary improvements can be started in the proper way and, furthermore, if a definite plan has been previously outlined, the work of the Bureau is minimized when the time comes for the submission for approval of the final contract plans which have been prepared by other engineers.

A large number of plans of contemplated water supply and sewerage systems have been received and reviewed, and permits issued for construction. In connection with special studies and investigations, numerous sketches and plans have been prepared.

The following tabulated information shows in summarized form the amount of work performed during the year:

TABLE 1.

SUMMARY OF ACTIVITIES OF ENGINEERING BUREAU — 1916

	<i>Visits made in Connection with Investigations</i>	<i>No. of Reports Written</i>	<i>Plans Received</i>	<i>Plans Prepared</i>	<i>Permits Issued</i>	<i>Orders Issued</i>
Water Supply . . .	778	35	131	86	40	1
Sewerage	511	5	254	42	49	10
Ice	19	5	..	..	..	..
Bottled Water . . .	45	..	..	..	1	..
Refuse Disposal ..	..	1	12	..	1	..
Miscellaneous . . .	132	5	102	19	..	..
Totals.	1,485	51	499	141	91	11

Ever since 1914, when water supply and sewerage conditions in the vicinity of Washington were made the subject of a special report, and a bill introduced in the Legislature to form the Washington Suburban Sanitary District, which failed of passage, the great need for sanitary improvements in this section has been kept before the State Board of Health by the large number of complaints and requests for assistance in solving individual water supply and sewerage problems. Little success has been attained in securing satisfactory relief measures and it is now, as always, apparent that no permanent relief can be secured until a sanitary commission is formed to have full charge of all water supply and sewerage design and construction.

With this idea still in mind another bill, drawn along the same general lines as that of 1914, was introduced in the Legislature during the present year. Owing to the opposition of the authorities of several municipalities, this bill was so amended as simply to provide for the appointment of a commission to make studies and preliminary plans for the necessary improvements and to report its findings to the Legislature of 1918. Owing to the limited expenditure allowed, the commission was unable to organize its own engineering force, but an arrangement was made with the State Board of Health for utilizing the services of its engineers. Some preliminary work was done in 1916 and during 1917 it is expected that a larger part of the time will be devoted to this study.

The ever-growing necessity for improvement in water supply and sewerage conditions at State institutions has increased the amount of work of this sort required, and the design and supervision of construction of these works has been a considerable factor in our operations during the year.

Special study was made of the operation of water filtration plants in the State and much improvement has been noted in the quality of water delivered by them. The filtration plant of Baltimore City was thoroughly investigated, in connection with the high typhoid rate, and recommendations for improvement in its operation were submitted to the city officials. A special study was made for an increased water supply for Hagerstown. A number of investigations were carried on relative to an increased water supply for Aberdeen and several reports were prepared on the situation. The town of La Plata was investigated and a preliminary plan and report made for a complete system of water supply. Preliminary plans and estimates of cost were prepared for sewerage systems in Westminster and Belair, two towns of considerable size where sewerage conditions are at the present time objectionable. Studies were commenced for sewerage improvements at Annapolis and Havre de Grace, but this work has not been completed. Sanitary surveys were made at Mt. Airy and Braddock Heights.

The work of improving sanitary conditions at school houses, and particularly of securing the installation of modern conveniences in new buildings, has been given considerable attention. This has centered particularly on the school buildings at Calvert, Rock Hall, Glenburnie, Millington, Kennedyville, and the Franklin High School at Reisterstown. At the four last-mentioned places complete improvements have been installed. At Calvert the work is under way but not completed.

It has been found that there are a great many places in the State where the requirements of the water supply and sewerage law are either not known or not fully understood, and occasional instances are discovered where work has been commenced without proper plans or permit. In many other cases plans of existing systems have not been presented to the State Board of Health, as required by law. One function of the Bureau therefore, is that of apprising the authorities of municipalities and others of the requirements of the law, as well as of the requirements of good sanitation. With a resident engineer located in four sections of the State, a better working force is provided for visiting communities and keeping persons in touch with the activities of the State Board of Health. While it is felt that this will greatly increase the influence of activities for the protection of health, it does, by no means, permit of as complete a covering of the State as would be possible if a greater number of assistants were available. Under present conditions it is not possible to follow up all lines of investigation, on account of the excessive demand in a few instances. It is inevitable, therefore, that some places apparently may be neglected while others receive a large share of attention. Investigations are taken up as conditions will permit, largely in order of their importance and, when commenced, it is endeavored to follow each particular one through to completion.

WATER SUPPLY SYSTEMS

A decided advantage has accrued to the work on public water supplies by a ruling on the part of the State Board of Health that the promiscuous examination of private water supplies would be discontinued and no samples from sources of this nature would be examined except when taken or authorized by representatives of the Department. This at once freed the engineering division from an onerous burden, for the entire time of one man was devoted to keeping track of and reporting upon these results, and the files were encumbered with information of little value. Further, the load in the laboratory was lightened, enabling the better examination of more important samples. It has always seemed that the results of this work were not commensurate with the time and expense entailed, for undoubtedly a large portion of the samples sent in by private individuals were from mere curiosity. With its abandonment, therefore, a material stimulus was given to more important work.

Broadly speaking, it is the duty of this office, in its relation to water supplies, to see that the inhabitants of the State are provided with safe drinking water. Obviously to investigate and seek to control every individual source of supply in the State would be impossible without the expenditure of large sums of money. A beginning has been made, therefore, with the public systems serving the greatest number of people and so on down to the small supplies, efforts being made to bring those already in existence to a condition of safety. Large centers of population without adequate public supplies are investigated and efforts made to create sentiment for bringing about the introduction of proper systems. This feature of the work has been given a great deal of attention and by the offer to prepare preliminary plans and estimates of cost interest is more quickly aroused than in any other way.

Table II gives a list of the principal water supplies in the State. There are probably in existence other community supplies of a more or less public character, serving a few houses, but the more important are indicated in this table. Table III shows the institutions in the State provided with water supplies.

TABLE II
PUBLIC WATER SUPPLIES IN MARYLAND — 1916

<i>Town</i>	<i>Estimated Population 1916</i>	<i>Ownership</i>	<i>Source of Supply</i>	<i>Gravity or Pumped</i>	<i>Form of Purification</i>
Aberdeen.....	625	Municipal	Spring	Pumped	None
Annapolis.....	8,656	Municipal	Stream	Pumped	Disinfection
Arlington.....	5,250	Private	Wells	Pumped	Disinfection
Suburban Water Co. Baltimore County					
Avalon Supply.....	30,197	Private	Stream	Pumped	Filtration and Disinfection
Baltimore County					
Herring Run Supply.....	25,493	Private	Stream	Pumped	Disinfection
Baltimore City.....	587,112	Municipal	Stream	Pumped	Filtration and Disinfection
Belair.....	1,030	Private	Wells	Gravity	None
Berlin.....	1,357	Municipal	Spring } Wells }	Pumped	None
Bloomington.....	372	Private	Stream	Gravity	None
Boonsboro.....	792	Private	Springs	Gravity	None
Braddock Heights.....	*150	Private	Springs	Pumped	None
Bradley Hills.....	30	Private	Well	Pumped	None
Brooklyn and Curtis Bay.....	4,500	Private	Wells	Pumped	None
Brunswick.....	4,444	Municipal	Well	Pumped	None
Burkittsville.....	228	Private	Springs	Gravity	None
Cambridge.....	6,785	Private	Wells	Pumped	None
Centreville.....	1,552	Municipal	Wells	Pumped	None
Chesapeake Beach.....	Summer Resort	Private	Wells	Pumped	Disinfection
Chestertown.....	2,730	Municipal	Wells	Pumped	None
Chevy Chase.....	1,200	Private	Wells	Pumped	None
Cottage City.....	75	Private	Well	Pumped	None
Crellin.....	300	Municipal	Well	Pumped	None
Crisfield.....	3,641	Municipal	Wells	Pumped	None
Cumberland.....	25,843	Municipal	Stream	Gravity	Filtration and Disinfection

* Summer Population — 2000

<i>Town</i>	<i>Estimated Population 1916</i>	<i>Ownership</i>	<i>Source of Supply</i>	<i>Gravity or Pumped</i>	<i>Form of Purification</i>
Curtis Bay (See Brooklyn)					
Decatur Heights.....	200	Private	Well	Pumped	None
Deer Park.....	1,388	Private	Spring	Pumped	None
Delmar.....	1,132	Private	Wells	Pumped	None
Denmore Park.....	1,000	Private	Wells	Pumped	None
Denton.....	1,817	Municipal	Wells	Pumped	None
East New Market.....	280	Municipal	Well	Pumped	None
Easton.....	3,088	Municipal	Wells	Pumped	None
Eckhart Mines.....	1,600	Private	Springs Wells	Gravity	None
Edgewood.....	50	Private	Well	Pumped	None
Elkton.....	2,486	Private	Stream	Pumped	Disinfection
Ellicott City.....	1,148	Private	Wells	Pumped	Disinfection
Emmitsburg.....	1,173	Private	Springs Stream	Gravity	None
Evergreen Lawn.....	600	Private	Well	Pumped	None
Federalsburg.....	1,344	Private	Wells	Pumped	None
Frederick.....	11,056	Municipal	Stream	Gravity	Disinfection
Friendship Heights.....	80	Private	Wells	Pumped	None
Frostburg.....	6,463	Municipal	Stream	Pumped	None
			Springs		
			Wells	Gravity	None
			Stream	Gravity	None
			Wells		
Glenburnie.....	350	Private	Well	Pumped	None
Glen Echo.....	200	Municipal	Stream	Gravity	None
Greensboro.....	608	Municipal	Wells	Pumped	None
Hagerstown.....	25,500	Private	Streams	Gravity	Disinfection
Hancock.....	933	Municipal	Well	Pumped	None

<i>Town</i>	<i>Estimated Population 1916</i>	<i>Ownership</i>	<i>Source of Supply</i>	<i>Pumped or Gravity</i>	<i>Form of Purification</i>
Havre de Grace.....	4,666	Private	Stream	Pumped	Filtration
Howard Park.....	1,500	Private	Wells	Pumped	None
Artesian Water Co.					
Hurlock.....	652	Private	Wells	Pumped	None
Hyattsville.....	2,318	Municipal	Wells	Pumped	None
Kensington.....	812	Municipal	Wells	Pumped	Disinfection
Laurel.....	2,608	Municipal	Stream	Pumped	Filtration and Disinfection
Linthicum Heights.....	100	Private	Wells	Pumped	None
Loch Lynn.....	200	Private	Springs	Gravity	None
Lonaeoning.....	1,540	Private	Stream	Gravity	None
Luke.....	950	Private	Stream	Pumped	Distilled Water
Middletown.....	710	Municipal	Springs	Gravity	None
Midland.....	1,173	Private	Streams	Gravity	Disinfection
Mountain Lake Park.....	378	Private	Springs	Gravity	None
Mt. Savage.....	3,000	Private	Springs	Gravity	None
New Windsor.....	454	Municipal	Springs	Gravity	None
Oakland.....	1,478	Municipal	Wells	Pumped	None
Oakland Mills.....	200	Private	Springs	Pumped	Disinfection
Ocean City.....	*538	Municipal	Wells	Pumped	None
Pen Mar.....	Summer Resort	Private	Springs	Pumped	None
Perryville.....	632	Private	Stream	Gravity	Disinfection
Pocomoke City.....	2,510	Municipal	Wells	Pumped	None
Port Deposit.....	1,391	Municipal	Stream	Gravity	None
Preston.....	343	Private	Wells	Pumped	None
Princess Anne.....	1,094	Municipal	Wells	Pumped	None
Ridgely.....	1,076	Municipal	Wells	Pumped	None
Rising Sun.....	435	Municipal	Wells	Pumped	None
Rockville.....	1,221	Municipal	Wells	Pumped	Disinfection
Roland Park.....	5,000	Private	Wells	Pumped	None
St. Helena.....	500	Private	Springs Wells	Pumped	None

* Summer Population — 4000

<i>Town</i>	<i>Estimated Population 1916</i>	<i>Ownership</i>	<i>Source of Supply</i>	<i>Gravity or Pumped</i>	<i>Form of Purification</i>
St. Michaels.....	1,791	Municipal	Well	Pumped	None
Salisbury.....	8,085	Private	Wells	Pumped	None
Security.....	400	Private	Well	Pumped	Disinfection
Severna Park.....	100	Private	Spring	Pumped	None
Snow Hill.....	1,986	Municipal	Wells	Pumped	None
Somerset.....	200	Private	Wells } Spring }	Pumped	None
Sparrows Point.....	6,000	Private	Wells	Pumped	Filtration
Sudbrook Park.....	350	Private	Wells	Pumped	None
Takoma Park.....	1,523	Municipal	Stream	Pumped	Filtration
Taneytown.....	915	Municipal	Wells	Pumped	None
Thurmont.....	924	Private	Stream } Springs }	Gravity	None
Union Bridge.....	883	Private	Wells	Pumped	Disinfection
Violetville.....	70	Private	Well	Pumped	None
Walkersville.....	710	Private	Streams } Springs }	Gravity	None
Westernport.....	3,109	Municipal	Stream	Gravity	Disinfection
Westminster.....	3,350	Private	Wells } Springs }	Pumped	None

TABLE III
INSTITUTIONAL WATER SUPPLIES IN MARYLAND

<i>Institution</i>	<i>Location</i>	<i>Estimated Population 1916</i>	<i>Source</i>	<i>Form of Purification</i>
Patapasco Manor Sanatorium.....	Ellicott City	25	Spring	None
Buckingham Industrial School.....	Buckeystown	70	Well	None
Charlotte Hall School.....	Charlotte Hall	80	Springs	None
Crowsville State Hospital.....	Crowsville	500	Wells	None
Eastern Shore State Hospital.....	Cambidge	250	Well	None
Endowed Sanatorium.....	Towson	100	Springs	None
Jewish Consumptives Home.....	Reisterstown	No Data	Wells	None
Leonard Hall.....	Leonardtown	No Data	Wells	None
Maryland House of Correction.....	Bridewell	800	Stream	Disinfection
Maryland School for Boys.....	Loch Raven	300	Well	None
			{	{
Maryland State College of Agriculture.....	College Park	300	Springs	None
			Well	Disinfection
Maryland Tuberculosis Sanatorium.....	Sanatorium	600	Stream	Disinfection
			{	{
			Springs	Disinfection
			Wells	
Mt. St. Mary's College.....	Emmitsburg	500	Spring	None
			{	{
			Wells	None
National Junior Republic.....	Annapolis Junction	100	Wells	None
National Park Seminary.....	Forest Glen	400	Springs	None
			Well	
Notre Dame Academy.....	Baltimore County	350	Wells	Filtration and Disinfection
St. James School.....	Lagerstown	52	Wells	Disinfection
Springfield State Hospital.....	Sykesville	1,800	Wells	None
			Stream	Disinfection
Tome Institute.....	Port Deposit	250	Springs	None
			Stream	Filtration

There were at the end of 1916, not including State institutions, 91 public water supplies in the State serving a population of 842,733, or 61.8% of the State's population of 1,362,807. Not all of these supplies are in satisfactory condition, and the Bureau is engaged in seeking their betterment. There are many closely-populated communities containing large populations that still continue to make use of private wells. Some of these are incorporated and others are not. Tables IV and V give the incorporated and unincorporated communities, respectively, with populations of over 500, which are without public water supplies.

TABLE IV

INCORPORATED COMMUNITIES IN MARYLAND WITH POPULATION OF 500 AND OVER WITHOUT PUBLIC WATER SUPPLY SYSTEMS

<i>Community</i>	<i>Estimated Population 1916</i>	<i>Community</i>	<i>Estimated Population 1916</i>
Bladensburg	600	Manchester (1910)	523
Capitol Heights	1,300	Mt. Airy	622
Cecilton	563	Mt. Rainier	2,500
Chesapeake City	918	Northeast	977
Clear Spring	549	Point of Rocks.....	511
Funkstown	574	Rock Hall	781
Gaithersburg	625	Sharpsburg	916
Hampstead	601	Sharptown	843
Kitzmillersville (1910)	865	Sykesville	565
Leonardtown	566	Williamsport	1,632

TABLE V

UNINCORPORATED COMMUNITIES IN MARYLAND WITH POPULATION OF 500 AND OVER WITHOUT PUBLIC WATER SUPPLY SYSTEMS

<i>Community</i>	<i>Estimated Population 1916</i>	<i>Community</i>	<i>Estimated Population 1916</i>
Alberton	562	Marion	600
Barton	1,287	Mt. Winans	No Data
Berwyn	No Data	Oella	516
Carlos	500	Overlea	No Data
Cockeysville	1,500	Raskeburg	No Data
Deal Island	1,500	Reisterstown	640
Eastport	2,000	Relay	No Data
Elkridge	685	Riverdale	1,200
Ewell	625	Savage	900
Fishing Creek	700	Seat Pleasant*	2,500
Gardenville	No Data	Texas	1,009
Granite	678	Tilghman	575
Hebron	550	Upper Fairmount	500
Hechester	600	Vale Summit	680
Lansdowne	No Data	Warren	712
Libertytown	589		

* Exclusive of Capitol Heights.

The two largest incorporated places in the State without a public water supply are Mt. Rainier and Williamsport. Mt. Rainier has secured the necessary legislation for its provision and plans are now being prepared, but beyond an occasional slight agitation of the question. Williamsport has made no progress in that direction. Both Williamsport and Funkstown can probably be served best from the Hagerstown system. Sykesville could probably find its source of supply at the Springfield State Hospital where the proposed water filtration plant will have a capacity much in excess of the demands of the institution for some years to come.

The many unincorporated communities in Montgomery and Prince George's Counties, bordering the District of Columbia, it is hoped will be provided for through the Washington Suburban Sanitary District. The probability of other unincorporated places, particularly those near Baltimore City, securing public supplies seems more remote, due to the county form of government, unless accomplished by private capital.

The actual number of inhabitants in a community in this State does not necessarily indicate the proportionate necessity for a water system, for the centers of population in Maryland are generally very closely built up, as a result of which, if modern improvements do not exist, unsanitary conditions are bound to occur. Such places as these, regardless of size, need the health protection given by a safe public water system.

The investigations of existing water systems have been directed towards improving their safety. Sources of pollution have been eliminated where possible and in a number of cases plants for purification have been installed as the result of the recommendations of this office. Most of the desired improvements have been made without recourse to the legal powers vested in the State Board of Health, and it is a tribute to many of the municipal authorities and others to record their willingness to make improvements when once made to realize the need.

SUPERVISION OF PURIFICATION PLANTS

Prior to 1916 the operation of water purification works in Maryland had not been subjected to a system of intensive observation by this office. Inspections, however, were made as frequently as the limitations of force and available funds would permit. A general survey of conditions at the purification works indicated that far more extensive and detailed control and supervision of their operation were necessary than had previously obtained.

In the case of disinfection plants, operation was generally in a chaotic state. The regulation of dosage of disinfectant was, in a number of instances, largely a matter of individual whim, dependent more upon the degree of intelligence of the operator than upon the demands or exigencies of the supply as related to public health. It has been our aim to impress upon individual operators the extreme necessity of close observation of operating details. This campaign has been developed to a large degree during 1916 through frequent inspections and by the gradual introduction of regular sampling, the analyses serving to check in a general way the efficiency of operation. Combined with routine analytical control, a beginning was made in the field of experimental checking of disinfection of water supplies, an activity which is to be developed more extensively in the future.

The operation of water filtration plants demands certain requisites which are independent of the size of the plant. The small plant which lacks the various refinements of measuring devices, controls, gauges and daily laboratory tests needs even more careful observation and study than one which is large and well-equipped. Too much dependence is frequently placed upon the mechanical features of a filtration plant, to the exclusion of what might be called the personal care which its control should embody. Studies of many of the works in Maryland have indicated clearly that their method of functioning has not yet been fully recognized. Both large and small plant operators are still impressed with the ancient idea that filtration plants run themselves and that "operation" consists of opening and shutting the different valves at certain times. Bad raw waters are deplored, but their coming is fated and simply demands a frantic outpour of coagulant accompanied by a silent prayer.

Without exception, the methods used at works of the older type consisted entirely of haphazard addition of chemicals, without regard to economy, safety, or efficiency. The control of coagulant dosage depended upon the eye of the operator and the clogging of the orifice. Low raw water turbidities resulted in the entire omission of coagulant, high turbidities in a complete waste of chemical in a hopeless effort, frequently in the absence of necessary alkalinity, to obtain proper coagulation. Acid effluents followed each rain, while undecomposed alum disgusted the wondering consumer. These conditions were followed in turn by comparatively good, with frequent repetition of distasteful, water. Regulation of the addition of chemicals implied the use

of a handy bucket or a shovel to be viewed with not too much discrimination and to be forgotten when other exigencies required the attention of the "operator."

In the more modern plants, a difficulty of a more insidious nature arose. The existence of intricate controlling and measuring devices gave rise to a false sense of security, resulting in implicit reliance upon the mechanical, rather than the personal, control of water purification. In the large plants, the superintendents sometimes felt that elaborate structural arrangements obviated the necessity for strict observation and coordination of operating details. Modern facilities were not always synonymous with efficient performance, when supervision consisted merely in the tabulation of records of operation, rather than their interpretation and adaptation to superior accomplishment. Our problem with respect to supervision of water filtration plants, was, therefore, twofold. In the one case, it was necessary to modify poor supervision and inadequate structural features in such manner as to obtain a moderate degree of consistently successful purification, while, in the other, improvements in environmental features, in place of structural inadequacies, demanded attention.

In order to point out briefly the problems encountered and the methods by which they were temporarily solved, it is well to discuss the typical conditions at several of the plants toward which the energies of this office were directed.

Takoma Park—The situation at the Takoma Park water filtration plant during 1916 was typical of practically all the smaller works in the State. They were not equipped with sufficient regulating or controlling devices, were operated usually by men with some training along mechanical lines, but not in water supply engineering, and in a number of instances were called upon to treat waters of surface streams of unusual fluctuations in physical and sanitary quality.

At Takoma Park one of the primary functions of rapid sand filtration was so completely unknown that successful operation at all times was not to be expected. The use of alum for coagulating purposes, and for providing a necessary film on the surface of the filter beds, was largely ignored excepting during periods of more than normal raw water turbidities. At times of low water, the use of alum was completely omitted, while with excessive raw turbidities alum was frantically poured in without regard to necessity or efficiency. Our first duty, therefore, was to explain in detail to the operator the mode of operation of rapid sand filtration plants and the importance therein

of continuous alum dosage. When this had been done it was necessary in this plant, as in others, to provide definite data as to the quantity of alum necessary under varying raw water conditions, to calibrate various orifices for controlling dosage and to provide in advance a schedule of the necessary quantities of alum to be mixed under all conditions of operation.

Combined with this difficulty there existed the unfortunate characteristic of a number of surface water supplies in Maryland of showing a marked reduction of raw water alkalinities with high river stages. It came about, therefore, that the difficulties of operation were greatest at periods of unusual turbidity, when the added difficulty of insufficient alkalinity for coagulant reaction was invariably present. Such a combination of circumstances demanded, therefore, a schedule of application of soda ash or lime, to permit of the more or less successful use of alum, at frequent intervals during the year. At the same time that these changes were introduced, it was necessary to provide as simple an apparatus as possible for determining raw water turbidities. It was found with even the cruder forms of apparatus that considerably more effective results were obtainable by the operator. While these features were being introduced, a system of frequent and consistent sampling at all points in the filtration plant were inaugurated. Brief studies of these results, after fairly continuous periods, indicated that most of the difficulties had occurred in previous months during two diametrically opposite conditions. With low raw water turbidity, poor results were usually obtained on account of the complete omission of alum, while with higher raw water turbidities acid waters resulted. Poor quality also resulted at these same periods, with a raw water alkalinity of only 6 to 10 p.p.m. As the above changes were made, however, these occurrences became less frequent. Although complete satisfaction is not yet attained at this plant, it is probable that more efficient operating results are to be expected as time goes on. It will be desirable, however, to safeguard the community by introducing as an auxiliary factor of safety, some form of chlorination for the filter effluent.

Havre de Grace—After a study of the analyses of water samples taken from the Havre de Grace plant during periods in 1914 and 1915, it was found that no consistent results had been obtained. A closer study seemed to indicate that the inconsistency of the efficiencies obtained could be traced almost entirely to inaccurate method of alum dosing. This inaccuracy, in turn, was reasonably shown to be due almost entirely to the

lack of understanding, on the part of the operator, of the principles of mechanical filtration.

When the study of this plant was started, about November, 1915, it became apparent that the plant was not equipped to produce the best results, owing to the poor condition of the pumps, the absence of any meters or recording devices, and the use of obsolete types of orifices for the dosing of alum, which prevented any exact calibration.

From observations of operation and tabulation of past bacteriological and chemical analyses, it was soon concluded that the primary factor affecting the purification possibilities of the plant was the turbidity of the raw water. In other words, the turbidity, controlling as it did the alum addition, in reality determined the high or low efficiency of the plant, depending on whether the turbidity was high or low. This was quite clear, when the examination of analyses of both this plant and a similar one (Takoma Park) showed, almost beyond a doubt, that the bacterial efficiencies varied directly with the turbidities. The reason for this is explained by the fact that the operator used only a qualitative test for turbidity. A water, appearing clean to his eye and requiring little or no alum, was shown by actual test to have a turbidity of between 25 and 30 p.p.m. and, therefore, a dose in the neighborhood of one-half grain per gallon was required. This absence of any but an inaccurate qualitative test naturally produced the condition of varying results, with inefficiency at low turbidities. With such methods, nothing else could be expected from the usual lay operator, since clear water to him meant no alum, which, in turn, precluded coagulation and made the filtration process practically useless.

Having determined the source of the trouble, it was made evident to the operator that alum was to be added no matter how clear the raw water appeared. This was made convincing by actual tests at the plant. The alum mixing chamber was calibrated so as to give a fairly exact means of controlling the dosing. The three alum orifices at hand were numbered and arranged in order, to be used as required by a table which we prepared, showing doses of alum for various turbidities. A minimum dose of alum, below which the operator was not to go, no matter how clear the water appeared, was also determined upon. In addition to the inauguration of these methods, a series of taps, to provide easier collection of samples, was installed on all the lines in the plant. This arrangement now makes possible the collection of samples from each stage of the operation and, therefore, a more exact study of various phases. To provide a still

more successful operation of the plant, it would be necessary to install a Venturi meter, for registering the amount of water being filtered.

A comparison of samples taken since November 15, 1915, with those of an earlier date seems to warrant our assumption that the control of alum is the predominating factor in filtration plant operation. The results since November, although really not sufficient in number to warrant any rigid conclusions, show a marked improvement in consistency and bear no relation to variations in turbidity.

Ellicott City—The chlorination of surface streams, subject to wide fluctuations in physical and sanitary quality, has always been carried out with considerable uncertainty. In the case of Ellicott City, a stream unusually poor in sanitary quality was being used for a public supply, with no treatment other than that of chlorination. Experience with Ellicott City has emphasized the importance of viewing such methods with considerable suspicion. The history of the operation of the hypochlorite plant at this place repeats a number of the difficulties encountered with similar supplies in the State. This was probably one of the first supplies in which it was indicated as being next to impossible to produce a consistently satisfactory quality of water by subjecting a surface water to a constant rate of treatment. A constant dose resulted usually either in unsuccessful purification of the water when the stream flow was excessive, or the production of tastes and odors when the stream flow was low. Where plants such as this were under the supervision of part time operators, paid a few dollars a month and engaged in other and more lucrative work, it is only reasonable to expect that nothing but a constant rate of treatment can ever be carried out. Such rate is usually found to be too low for continuous purification, since the amount of hypochlorite added is controlled almost always by the public's complaints regarding tastes and odors. It is found, therefore, that during a great portion of the time, the operator takes it upon himself to omit treatment entirely or to decrease the dose to such a point that no substantial decrease in bacterial content takes place in the water after application of the chemical. Experience with Ellicott City has indicated the great difficulty which supervisory departments always encounter in attempting to provide necessary scientific control over water purification works where financial limitations of the community affected make effective management almost impossible. In such cases, as in Ellicott City, it has been found advisable frequently to abandon surface supplies in favor

of some other source, generally one of an underground nature, which requires a much less skilled form of control. The difficulties with the Ellicott City water supply have resulted in exactly this sort of a recommendation, and it is probable that the surface supply will be abandoned in the near future and replaced by one from drilled wells.

SEWERAGE SYSTEMS

More time has been devoted to water supply than to sewerage principally because more communities have water systems and it has always been felt that the first sanitary necessity is a safe water system. This office is required to investigate sewerage conditions throughout the State and to institute corrective measures where necessary for the protection of health and the prevention of nuisances.

There are a few towns with complete or nearly complete sewerage systems, while a considerably greater number have "sewers", such as they are, in a few streets, many of them laid without thought of extension to adjacent districts, not deep enough to provide for all abutting properties, and in other ways inadequate for proper service. These generally discharge into a stream at the foot of the street or into a nearby ditch, there to create a nuisance or a menace to health. With the gradual advancement of sanitary knowledge comes the demand of the people for more modern means of sanitation. The average property owner now insists upon having water under pressure and modern plumbing in his house. This calls for modern sewerage, not now for one street but for the entire community, and the "one-street" sewer is found no longer to serve. It was built without modern appreciation of the sewerage problem, usually without engineering advice, and the state of obsolescence is quickly reached. To obviate repetitions of such affairs the law requires that all plans for new sewers or sewerage systems shall be passed upon by the State Board of Health. Then it can be determined if proper provision has been made for the growth of a community and it can also protect the community from the natural tendency to get along without, or with incompetent but cheap, engineering service. Substantial aid can be also rendered the town and its engineer in arriving at the best solution of the problem.

Table VI shows the communities with complete or fairly extensive sewerage systems. There are others with partial systems and some of the "one-street" variety not included in this list.

TABLE VI

COMMUNITIES IN MARYLAND HAVING COMPLETE OR FAIRLY
EXTENSIVE SEWERAGE SYSTEMS

<i>Community</i>	<i>Estimated Population 1916</i>	<i>Community</i>	<i>Estimated Population 1916</i>
Annapolis	8,656	Havre de Grace.....	4,666
Baltimore City	587,112	Hyattsville	2,318
Cambridge	6,785	Kensington	812
Centreville	1,552	Laurel	2,608
Chestertown	2,730	Oakland	1,478
Cumberland	25,843	Pocomoke City	2,510
Deer Park	1,388	Preston	343
Easton	3,088	Princess Anne	1,094
Frederick	11,056	Ridgely	1,076
Frostburg	6,463	Rockville	1,221
Glen Echo	200	Salisbury	8,085
Greensboro	608	Takoma Park	1,523
Hancock	933		

Tables VII and VIII show the incorporated and unincorporated communities respectively, having populations of 500 and over, with no or very few sewers.

TABLE VII

INCORPORATED COMMUNITIES IN MARYLAND, WITH POPULATION OF 500 AND
OVER, BUT WITH NO OR VERY FEW SEWERS

<i>Community</i>	<i>Estimated Population 1916</i>	<i>Community</i>	<i>Estimated Population 1916</i>
Aberdeen	625	Manchester (1910)	523
Belair	1,030*	Middletown	710
Berlin	1,357	Midland	1,173
Bladensburg	600	Mt. Airy	622
Boonsboro	792	Mt. Rainier	2,500
Brunswick	4,444	Northeast	977
Capitol Heights	1,300	Ocean City	538
Cecilton	563	Oxford	1,157
Chesapeake City	918	Perryville	632
Clear Spring	549	Point of Rocks.....	511
Crisfield	3,641	Port Deposit	1,391
Delmar	1,132	Rock Hall	781
Denton	1,817	St. Michaels	1,791
Elkton	2,486	Sharpsburg	916
Ellicott City	1,148	Sharptown	843
Emmitsburg	1,173	Snow Hill	1,986
Federalburg	1,344	Sykesville	565
Funkstown	574	Taneytown	915
Gaithersburg	625	Thurmont	924
Hagerstown	25,500	Union Bridge	883
Hampstead	601	Walkersville	710
Hurlock	652	Westernport	3,109
Kirzmillersville (1910)	865	Westminster	3,350
Leonardtown	566	Williamsport	1,632
Lonaconing	1,540		

* System to be constructed.

TABLE VIII

UNINCORPORATED COMMUNITIES IN MARYLAND WITH POPULATIONS OF 500
AND OVER WITHOUT SEWERAGE SYSTEMS

<i>Community</i>	<i>Estimated Population 1916</i>	<i>Community</i>	<i>Estimated Population 1916</i>
Alberton	562	Ilchester	600
Arlington	5,250	Lansdowne	No Data
Barton	1,287	Lauraville	No Data
Berwyn	No Data	Libertytown	589
Brooklyn and Curtis Bay.	4,500	Luke	950
Carlos	500	Marion	600
Catonsville	4,000	Mount Savage	3,000
Cockeysville	1,500	Mount Winans	No Data
Curtis Bay (See Brooklyn).		Oella	516
Deal Island	1,500	Overlea	No Data
Denmore Park	1,000	Raspeburg	No Data
Eastport	2,000	Reisterstown	640
Eckhart Mines	1,600	Relay	No Data
Elkridge	685	Riverdale	1,200
Ewell	625	Savage	900
Fishing Creek	700	Seat Pleasant†	2,500
Gardenville	No Data	St. Helena	500
Govans	3,000	Texas	1,009
Granite	678	Tilghman	575
Halethorpe	No Data	Towson	2,000
Hamilton	No Data	Upper Fairmount	500
Hebron	550	Vale Summit	680
Highlandtown*	25,493	Warren	712
Howard Park	1,500		

* Includes Canton and Orangeville.

† Exclusive of Capitol Heights.

It may be readily seen that there are relatively few places in the State with complete or extensive sewerage systems. Even some of those listed in Table VI will require extensive alterations in and extensions to the existing systems. Disposal conditions are extremely objectionable in a considerable number of instances, as many of the towns that are fairly well sewered have no treatment works, and still others have works that are either poorly designed, of unsuitable type, or improperly operated.

The office has made preliminary sewerage plans for Westminster, Crisfield, Belair and Hurlock and has made preliminary studies for extensions and improvements to the systems at Cambridge, Frostburg, Havre de Grace and Princess Anne.

At present there are but few sewage disposal plants in the State and most of them are improperly cared for. The plant at the Springfield State Hospital is an exception as it has given excellent results since its operation was started. At Easton the disinfecting plants do not seem to give satisfaction and the shallow settling tanks are difficult to clean.

A great deal of work has yet to be done toward improving sewerage conditions throughout the State and it will require the utmost efforts on the part of the Department to keep the necessity for such improvements before the minds of municipal authorities.

STREAM POLLUTION

Many of the State's watercourses still are grossly polluted, due to lack of proper treatment of household sewage or industrial waste. Among the most objectionably polluted waters are the harbors of Cambridge and Annapolis, Curtis Bay, certain small streams in the counties near Baltimore and Washington, Wills Creek, the Chesapeake and Ohio Canal and the Potomac River at Cumberland, and Carroll Creek at Frederick. Most of these locations have been examined by this Bureau during previous years, but little has been done up to this time towards the installation of improvements.

Curtis Bay — In the summer of 1916, the attention of the State Department of Health was called to the existence of sewage disposal conditions in Curtis Bay which were rapidly becoming intolerable. Various complaints had been made to the Maryland Conservation Commission regarding the increased mortality of fish life in these waters. Boatmen were unanimous in their cry for relief from the destructive power of the water upon the paint, structure, and piping of boats, large and small. About the same time, the County Commissioners of Anne Arundel County began a survey of the section in order to prepare plans for a sewerage system and disposal plant. For the purpose of advising the Commissioners regarding the desirability of including or excluding the different industrial wastes arising in the section, an inquiry was instituted into the nature of those wastes, their effect upon the bodies of water which received them, their probable action upon the efficiency of a disposal plant, and, finally, into the necessity of including them in a comprehensive sewerage system.

The investigation which resulted consisted primarily of three phases of study: (1) A fairly complete inspection of the operation of the various plants, with particular reference to the amount and nature of the waste products; (2) the collection and examination of samples from all the plants and, in some cases, from individual stages of plant operation; and (3) a study of the bodies of water in the vicinity of the plants in order to arrive at the effect of these wastes upon them.

The study was started during the latter part of 1916 and was carried over into 1917. The conclusions arrived at were as follows:

With the possible exception of the Martin Wagner food preserving plant, waste from which may at some times of the year be of sufficient volume and putrescibility to affect noticeably the water into which it is discharged, the only industry which is causing a very material pollution of Curtis Bay is the Curtis Bay Distillery.

There is little evidence to support the contention that the condition of Curtis Bay has any effect on fish life except locally, for within a short distance of the polluting foci, the dissolved oxygen content of the water was found to be as high as in more distant portions of the Patapsco River, and certainly great enough to support the highest types of fish life. From a study of the character of the industries, there does not appear to be any element of sufficient quantity or toxicity being discharged into the streams to have more than a local effect.

While most of the conditions in the industrial section of Curtis Bay may properly wait for change upon the establishment of a general sewerage system, this cannot be said of that due to the discharge of waste from the Curtis Bay Distillery. This company should be required at once to take steps which will correct the nuisance of which it is the originator.

It may be noted also that the sanitary conveniences at practically all of the industrial plants are grossly inadequate, and that all of the waste of this character should be separated from those wastes still allowed to be discharged into the harbor and should be carried to a general sewerage system. The conditions around the plants could be materially improved by installing sanitary conveniences for the workmen.

SANITARY SURVEYS

In many communities not served by either water or sewerage systems this office has from time to time made complete surveys of sanitary conditions and submitted recommendations to the municipal authorities for improvements. During 1916 such surveys were made at Mt. Airy and Braddock Heights. The Braddock Heights data had not been compiled by the end of the year.

Mt. Airy — For some time past it had been known that sanitary conditions in Mt. Airy were not of the best. Sanitary improvements had been given little attention and no adequate methods for the disposal of household wastes or garbage had been instituted. Since this condition was, in a measure, responsible for the failure of the town to exhibit the normal growth to which its natural advantages entitled it, it was decided to institute a

fairly complete investigation of the general sanitary status of the community.

The survey included the systematic collection of data of public health significance, such as the use and source of milk, ice and water; the location of all private wells with reference to privies or other polluting influences; the methods of disposal of fecal matter and garbage; and the general prevalence of disease, with particular reference to typhoid fever.

The results of the study indicated there was little doubt but that the system of obtaining water from private wells, insufficiently protected in a number of instances against contamination, was highly dangerous. To obviate the possibility of deleterious effects resulting from the use of individual wells in closely built-up sections, it was recommended that a complete and well-designed public water supply system be installed.

Since no satisfactory sewerage system was available, it was recommended also that one, adequate for present and future needs, be designed and installed at an early date. In the interval elapsing between such design and the installation of the system, it was suggested that the privies in use be so reconstructed as to protect their contents against flies, chickens, and undue exposure of other kinds.

The necessity for more careful attention to the question of garbage, than has existed in the past, was made apparent with the result that a system of waste separation, collection and disposal was outlined.

SUPERVISION OF WATER SUPPLY AND SEWERAGE CONSTRUCTION AT STATE INSTITUTIONS

In 1914, when complaint was received concerning sewerage conditions at the Springfield State Hospital, the resulting investigation culminated in a request by the Board of Managers of the institution that this office prepare plans and supervise the construction of the type of plant which it deemed necessary to remedy conditions. As there is a provision in Chapter 810 of the Acts of 1914 which permits the State Board of Health to undertake detailed work when specifically delegated to do so by the Governor or Legislature and a special appropriation is provided for the purpose, this work was carried out after the Governor's consent was secured, and the expense was borne out of the funds of the institution. An engineer was employed exclusively for this work, and since that time his services, together with those of other engineers in the Bureau, have been engaged from time

to time on design and supervision of construction at several of the State institutions.

The large amount of institutional work performed during the past two years has made necessary the establishment of a division of surveys and construction, to superintend all survey and construction work relative to water supply and sewerage improvements at the different State institutions. As no specific appropriation is made for this purpose, the time of the engineers engaged on the work is charged directly to the institution and the amounts paid to the State Department of Health. It has been found that water supply and sewerage conditions at many institutions supported entirely, or in part, by State appropriations are extremely objectionable and unsafe. It is firmly believed that improvement can be secured with more uniformity and less cost to the State by having this office supervise all improvements of a sanitary character. Certainly the State cannot afford to allow a continuation of the many insanitary conditions which have been found. It is unfortunate that some of the existing works have been constructed at considerable cost, for in some cases they are either worthless or else dangerous from a sanitary standpoint. Work of a similar character is carried out by the Pennsylvania State Department of Health, under a special appropriation. It would seem desirable to provide a special fund for improving sanitary conditions at State institutions, where necessary, the money to be left to the disposal of the State Department of Health for this specific purpose only. In this way a great many objectionable conditions would be eliminated and the health of persons detained at the State institutions be given greater protection than is now the case in some. Furthermore, a special fund of this sort would make possible the adoption of immediate remedial measures, where absolutely necessary for the protection of health, in those instances where the resources of the particular institution were insufficient to pay for the work.

Springfield State Hospital — The condition of the sewage disposal plant at this institution was reported upon in 1914 and a description given of the proposed improvements. The work was completed in 1915 by the addition of a secondary Imhoff tank for final treatment of the sprinkling filter effluent. The disposal plant has been receiving nearly 300,000 gallons of sewage per day and although it was designed for only 250,000 gallons it has been giving satisfactory service. The primary settling tanks, however, which are shallow, flat bottomed structures, require frequent cleaning and do not give as good results as an Imhoff tank would accomplish. It has been recommended that these

tanks be abandoned and an Imhoff tank constructed in their place.

The automatic ejector for laundry wastes and power-house sewage has never given satisfaction and it has been recommended that a sewer be constructed to take all the sewage from the Women's Group, Laundry and Power House by gravity to the proposed Imhoff tank, thus eliminating entirely the inverted siphon across the meadow which at times has become surcharged, and also doing away with the necessity for pumping.

Upon the completion of the sewage disposal improvements, studies and designs were made for water purification works, which are now in the course of construction and should be in operation in the early part of 1917. These consist of a 1,000,000-gallon storage reservoir to act as a settling basin and serve to supply water during times of high turbidity in Piney Run, the source of supply; a rapid sand filtration plant of 500,000 gallons daily capacity and a new pumping station.

Maryland House of Correction — In 1915 plans were completed and presented to the Board of Managers of the Maryland House of Correction for comprehensive water supply and sewerage improvements. A description of this work was given in the report for 1915. No steps were taken to start the work during that year, but in 1916, after the control of the institution was removed from the Board of Managers and placed, along with other State penal institutions, in the hands of the State Board of Prison Control, the latter determined to proceed with the work and utilize an appropriation of \$40,000 which had been granted by the Legislature of 1916 for this purpose. Some slight revisions were made in the plans and preparations made to commence work early in 1917.

Maryland Tuberculosis Sanatorium — Sewerage conditions at this institution have been gradually becoming more and more objectionable. The disposal plant, consisting of a small septic tank and a sub-surface irrigation field of considerable size, situated on the mountain side, is now incapable of properly caring for the sewage flow, with the result that sewage comes to the ground surface and creates offense. This office was requested to furnish an estimate for complete sewerage improvements and finally the State Board of Health was given the authority to prepare construction plans for and supervise the construction of a complete new sewage disposal plant and the necessary rearrangement of the sewerage system.

About a mile of new sewer leading to a new disposal plant has been built, a portion of which is in the county road. The

disposal plant is located farther down the mountain on the opposite side of the Western Maryland Railway tracks from the old plant and near the water works pumping station. It has a net capacity of 100,000 gallons per day and consists of primary and secondary Imhoff tanks, sprinkling filters, and final sand filters. The latter were deemed necessary on account of the small size of the stream receiving the effluent.

The construction work was started early in the summer and carried through the remainder of the year.

REFUSE DISPOSAL

Very little investigative work on refuse disposal or collection has been done by this Bureau. While conditions in most communities with regard to the disposition of garbage and other refuse are very bad and should receive attention, practically all of the time of our limited force has been spent on water supply and sewerage work which has been considered to be of more immediate importance in its relation to the preservation of the public health.

During the year Cumberland installed and put into operation a garbage incinerator having a capacity of 10 tons per 24 hours. This plant is the first of its kind to be installed in the State.

BOTTLED WATER SUPPLIES

The supervision by this Bureau over bottled water supplies offered for sale was maintained during the year except that, on account of the pressure of other and more important work, it could not be carried on as consistently as during the previous year. The law provides that before any water is offered for sale for potable purposes in the State the methods of collecting, bottling and handling must meet the requirements of this Department.

By far the greater number of the concerns selling bottled water operate in and around Baltimore City and in most every instance obtain water from sources located within the State. There are, however, several firms which have water shipped into the State from outside points. In such cases they are allowed to sell water only upon presentation of a permit issued by the state board of health of the state from which the water is shipped.

The work on bottled water supplies has consisted principally of inspection of the sources of supply, the examination of bottling

and handling methods, and the collection of samples for examination. It is believed that, with the improvement in quality of the public water supplies in the State in general, the bottled water trade will gradually decrease.

ICE SUPPLIES

A number of the ice manufacturing plants in the State were investigated for the purpose of studying the methods employed in the various types of plants and of collecting samples of raw water and ice for examination. This work was carried on whenever the time could be spared from the more important problems of water supply and sewerage.

CLERICAL REPORT AND FINANCIAL STATEMENT.

WALTER N. KIRKMAN, *Chief Clerk.*

Number of letters written.....	26,456
“ “ letters received	18,038
“ “ pages typewritten for reports, etc.....	23,947
“ “ second class packages, sent out.....	4,458
“ “ laboratory and miscellaneous reports.....	9,440
“ “ reports sent to physicians.....	8,104
“ “ circulars and circular letters sent out.....	30,286
“ “ pieces of mail collected, sealed and mailed.....	56,314
“ “ sheets multigraphed, including 206 electros and 403 forms	1,062,285
“ “ sheets folded on folding machine.....	47,950
“ “ bottles of disinfectant bottled.....	15,207
“ “ boxes, crates, etc., shipped.....	1,527
“ “ boxes, crates, etc., received.....	1,854
“ “ requisitions filled	985
“ “ receipts sent for transit permits.....	1,358
“ “ registration cards written.....	12,468
“ “ given names entered on certificate of birth.....	2,990
“ “ letters sent out regarding cause of death.....	323
“ “ birth certificates tabulated.....	21,012
“ “ death certificates tabulated.....	14,266
“ “ certified copies of death issued.....	523
“ “ certified copies of birth issued.....	30
“ “ searches made for copies of births and deaths.....	1,191
“ “ cards written for cross index.....	13,026
“ “ Anne Arundel County survey cards punched.....	2,068
“ “ registration cards resent.....	564
“ “ postals sent for given names of children.....	5,006
“ “ cards unclaimed and sent to Local Registrars.....	642
“ “ vouchers sent out.....	1,382
“ “ orders written	1,115
“ “ deaths for which there was no corresponding certificate on file	148
“ “ obituary of newspaper read for non-report of death number found	15
“ “ certificates of qualification issued.....	18
“ “ certificates of registration issued.....	12
“ “ tables compiled for V. S. report — 1915.....	50
“ “ auto repair jobs.....	120
“ “ stencils written	106
“ “ neostyle sheets	3,490
“ “ reams of paper cut.....	19

	Sub-		To Institutions	
	Stations	Individuals	Balto. City Health Dept.	Total
Napkins	162,500	268,000	1,144,000	1,574,500
Sputum Cup Fillers.....	162,500	237,400	186,915	585,915
Sputum Cup Holders	1,747	288	1,733	3,768
Disinfectant (½ pt. bottles).	1,747	132	13,758	15,637
Disinfectant (gallons) .....	.....	25	.....	25
Water Proof pockets.....	2,030	.....	553	2,583
Books of information	1,015	.....	245	1,260

Every item in the above clerical statement exceeds similar item for the previous year, indicating a very considerable growth in the clerical work of the Department.

Following is a statement of the receipts and expenditures for the period January 1, 1916, to September 30, 1916. This period is under review and not the calendar year, for the reason that commencing October 1, 1916, the fiscal year of the Department was made to coincide with the fiscal year of the State, namely, October 1st to September 30th. The last quarter in the year will be reviewed in the report for the calendar year 1917.

The financial statement shows that regular appropriations made available during the nine months' period under review total \$48,250.00, whereas our annual appropriations total \$142,500.00.

As above stated the fiscal year of the Department was changed to October 1st and the amounts of the annual appropriations coming due prior to that date were pro-rated. Following is a statement of the annual appropriations which were pro-rated and the amounts made available.

<i>Due Date</i>	<i>Name</i>	<i>Annual Appropriation</i>	<i>Available to October 1, 1916</i>
April	Communicable Diseases	\$10,000.00	\$5,000.00
April	Bureaus	24,000.00	12,000.00
April	Sanitary Engineering	25,000.00	12,500.00
April	Pasteur Treatment	2,500.00	1,250.00
July	Food and Drugs	15,000.00	3,750.00
July	Vital Statistics	5,000.00	1,250.00
July	Sanitary Districts	50,000.00	12,500.00
Total.....			\$48,250.00

The statement of receipts indicates that on January 1st a balance of \$59,534.26 existed for the purpose of defraying expenses to due dates of appropriations in April and October. If to this is added the proportion of our appropriations as above stated, \$48,250.00, and finally \$831.60 received from sundry sources, a grand total of \$108,615.32 is obtained, representing receipts from all sources for the nine months' period.

The expenditure classification sheet follows showing expenditures by bureaus and objects. The footings of the vertical columns represent the total expenditures of the several bureaus and the footings of the horizontal columns, the totals expended for each object of expenditure by all bureaus. This statement shows the total expenditures for the period to have been \$107,459.57.

The statement shows that the amount charged to personal services represents 60% of the total expenditures for the period.



The difference between the receipts and expenditures is represented by an amount of \$1,155.75 which reverted to the State Treasury. This balance existed in the Pasteur Treatment account and represents an unexpended balance from \$2,500.00 which was appropriated to defer the cost of the administration of Pasteur treatment to integrent persons.

The books and accounts of the Department were audited by the Baltimore Audit Company who certified to the correctness of the same.

FINANCIAL STATEMENT FOR THE PERIOD JANUARY 1, 1916,
TO SEPTEMBER 30, 1916.

Balance as of January 1, 1916, to carry to due
dates of appropriations..... \$59,534.26

Regular appropriations to October 1, 1916,
as follows:

Communicable Diseases \$5,000.00
Bureaus 12,000.00
Foods and Drugs 3,750.00
Sanitary Engineering 12,500.00
Vital Statistics 1,250.00
Sanitary Districts 12,500.00
Pasteur Treatment 1,250.00

48,250.00

Received from Sundry Sources as follows:

Fine for violation of Vinegar

Law 5.00

Midwife examination fees 24.00

Reimbursement for services per-

formed in connection with

midwife work 25.00

Refund by Circuit Court of Alle-

gany County for use of auto. 47.85

Rebate on auto insurance 12.85

Refund for personal use of autos. 3.20

Salary drawn and not paid. 30.00

Engineering services in connec-

tion with Springfield State

Hospital 650.16

Overdraft on Communicable Dis-

ease Appropriation 3.00

831.06

Less Disbursements as per classification sheet..

\$108,615.32

107,459.57

Unexpended balance on account Pasteur Treat-

ment refunded to State Treasury.....

1,155.75

	Bureau of Bacteriology	Bureau of Chemistry	Bureau of Communicable Diseases	Executive Offices	Division of Food and Drugs	Bureau of Sanitary Engineering	Bureau of Vital Statistics	Sanitary Districts	Total
Add. Mach. and Supplies.....				20.41					20.41
A. A. County Survey.....								206.23	206.23
Apparatus.....	182.76	99.13							281.89
Autos and Equipment.....				24.86	1,008.28		7.33		4,439.21
Autos Op. Expense and Main.....			41.74	444.71	458.01	238.61			2,013.16
Audit of Accounts.....				97.50					97.50
Advertising.....				370.20	41.40				411.60
Binders.....				10.75		27.50	1.40		39.65
Blue Prints.....						63.56			63.56
Books and Subscriptions.....				298.69				40.52	339.21
Chemicals.....	20.97	50.31							71.28
Controls.....	24.50								24.50
Cash Expense a-c "C".....									200.00
Electric Supplies.....	15.50	14.59		113.90			4.00		181.54
Expressage, etc.....	58.72	2.79	129.72	17.13	.37	107.63	10.92		427.48
Frederick County Survey.....								1,075.97	1,075.97
Filing Cabinet and Supplies.....	19.55	11.85	54.11	418.28	9.10	55.20	107.73	85.15	826.97
Fuel, Light, etc.....	132.49	60.13				7.00		58.50	258.03
Furniture.....				548.70				200.81	749.51
Insurance.....		10.00		32.33	12.84			121.89	177.06
Laboratory Equipment.....		27.00							27.00
Laboratory Supplies.....	378.97	256.88						519.63	1,355.48
Laundry.....			2.19						2.19
Media, Stains, etc.....	70.83			136.46					70.88
Miscellaneous.....	159.71	10.24	37.16		88.80	9.00	7.15		639.09
Multigraph and Supplies.....				693.38					693.38
Notary Fees.....					9.30				9.30
Paper.....				1,361.11				60.82	1,421.93
Per Diem and Expenses.....				195.00					195.00
Personal Services.....	4,826.70	6,799.96	5,462.78	9,904.39	7,601.31	12,354.00	5,585.10	12,201.29	64,135.53
Physician's Fees.....			472.50						472.50
Postage.....				2,374.51				104.22	2,478.73
Printing.....	57.15		83.10	324.21	79.16	165.85	53.75		660.35
Rest.....	401.20	228.33	208.33	1,558.74	16.09	342.33			3,247.49
Samples (F. and Dgs.).....				111.69					111.69
Stationery and Office Supplies.....			48.90	1,760.99	3.00	72.19	30		2,091.94
Summer Survey.....								3,707.34	3,707.34
Tab. Mach. and Supplies.....			278.50				285.50		564.00
Technical Supplies (S. E.).....						269.6			269.6
Telephone and Telegrams.....				581.64	.26		.60		582.50
Travelling Expenses.....	21.87	18.75	21.48	139.36	1,012.11	2,091.87	129.96	3,877.82	8,213.22
T.B. and Typhoid Prophylactic Supplies.....			2,676.26						2,676.26
Typewriters and Supplies.....				255.32					255.32
Vaccines and Antitoxins.....			678.79						678.79
Water Boxes.....								283.00	283.00
Total.....	\$6,540.91	\$7,589.96	\$10,190.56	\$21,684.57	\$10,752.23	\$15,906.58	\$6,249.74	\$28,515.02	\$107,459.57

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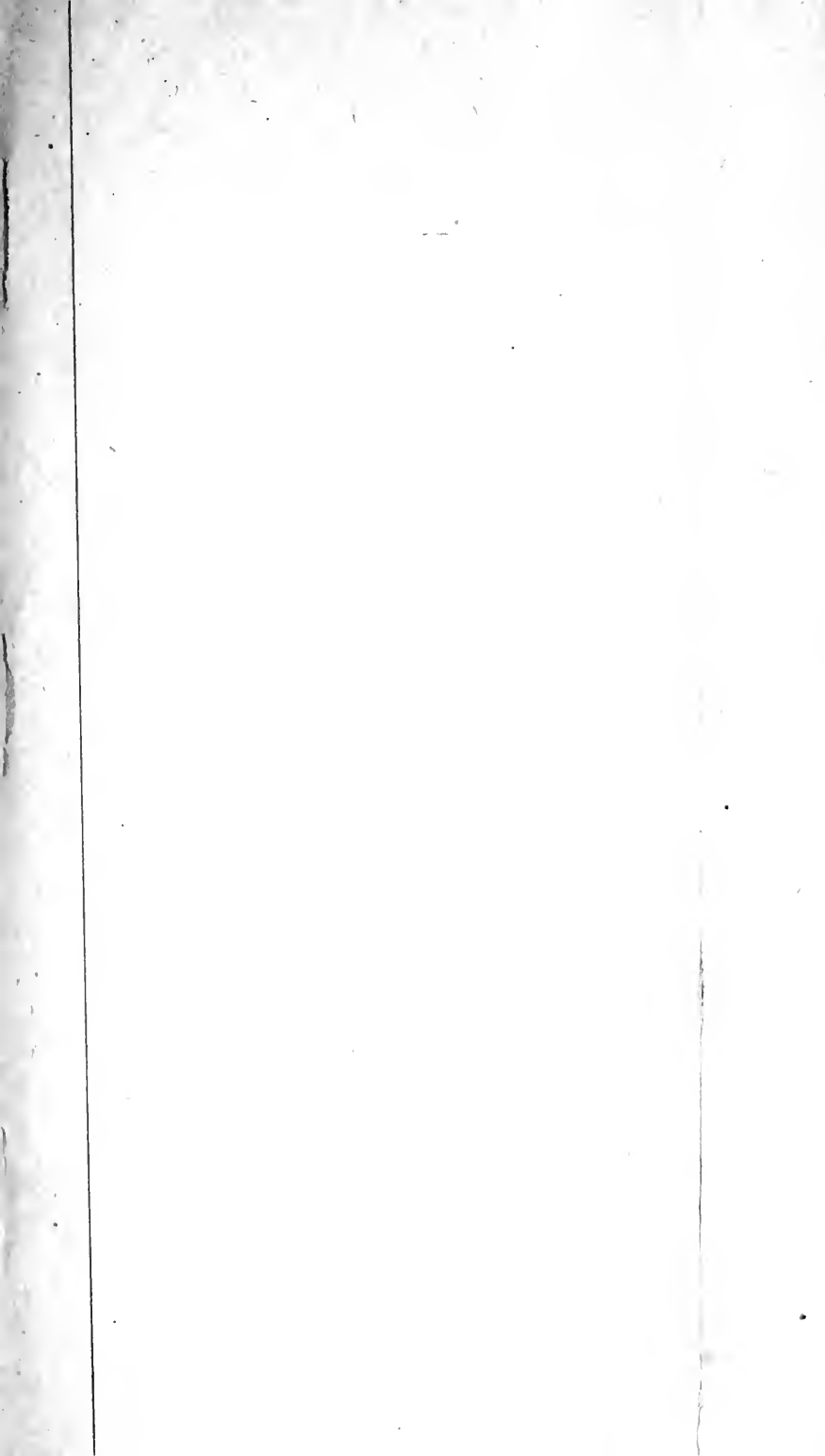


TABLE A

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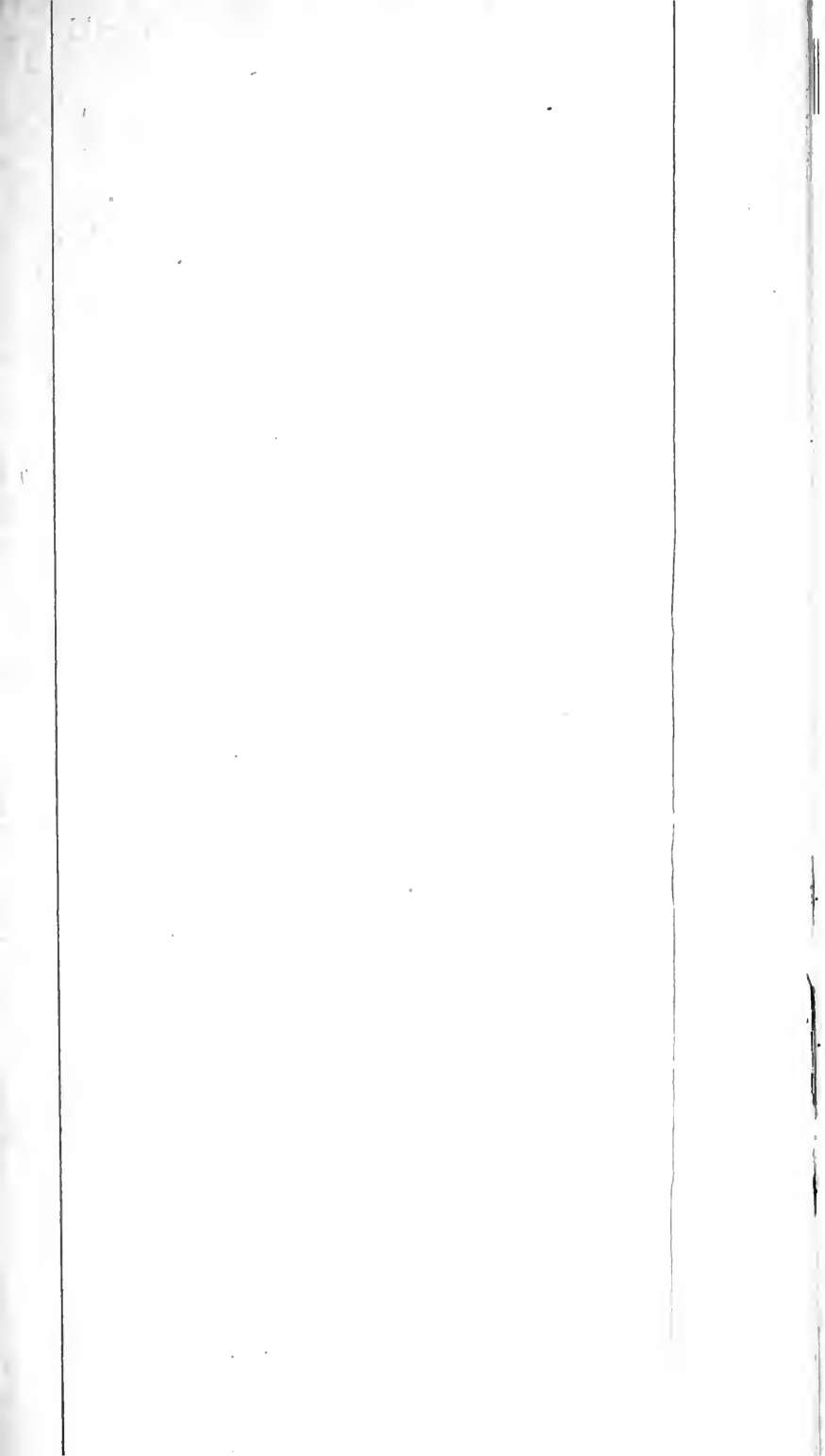


TABLE A-CONTINUED
DEATHS IN BALTIMORE CITY, 1916, BY AGE, SEX, COLOR, MONTH AND CAUSE.

January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	White	Colored	Total	Causes of Death	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 and over	Unknown	Total																																																																																																																																																																																																																																																																																																																																																																																																																								
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* 1 Chinese.

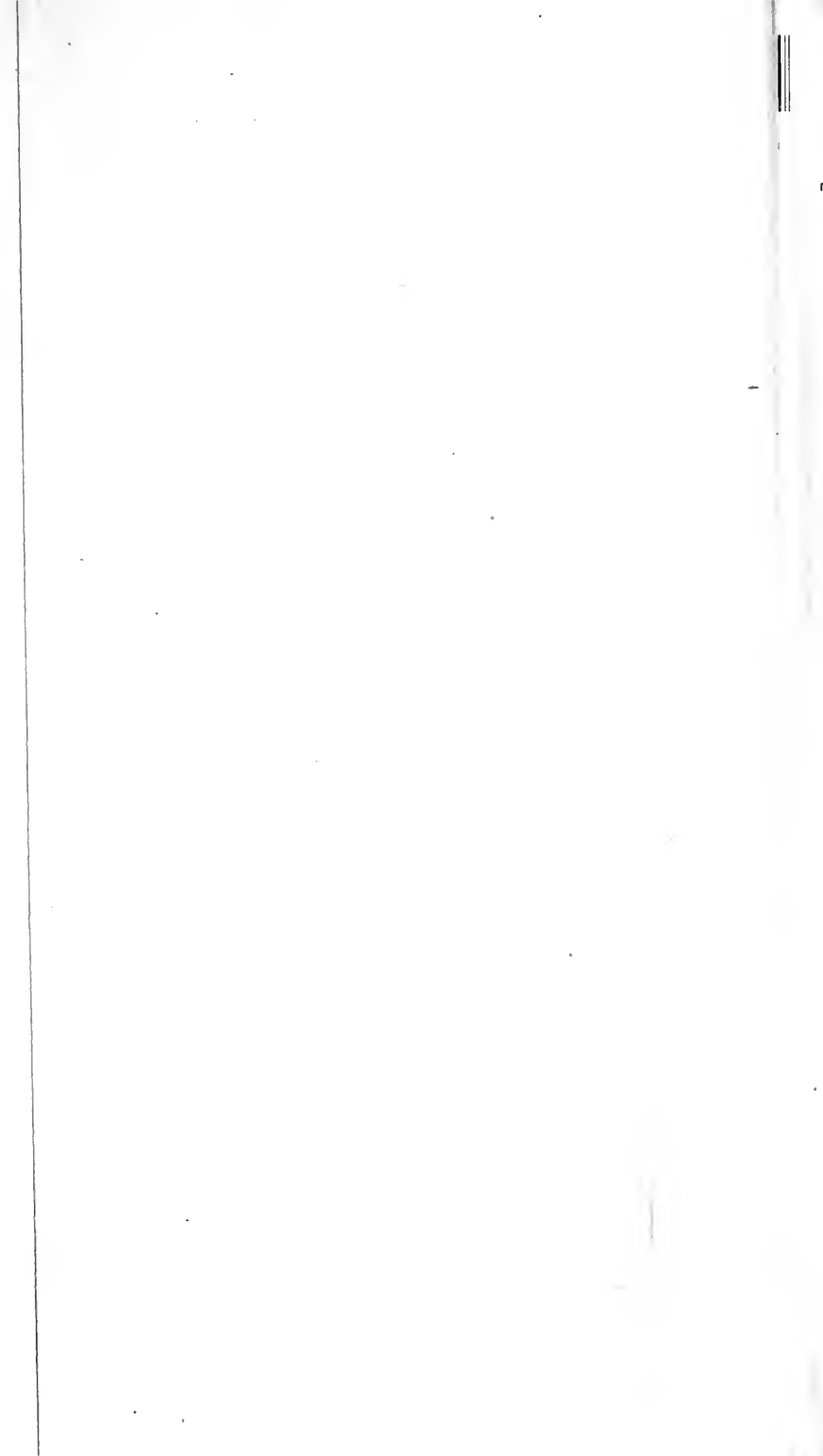
TABLE A—CONTINUED
DEATHS IN BALTIMORE CITY, 1916, BY AGE, SEX, COLOR, MONTH AND CAUSE.

January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	White	Colored	Total	Causes of Death	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 and over	Unknown	Total	
2		1	1	2		1			1	1		6	3	9		9	95. Gangrene of the lung.....												1	1	1	2		1				1	2		9
1												1	1	1	1	12	96. Asthma.....																								
													1	1	1	12	97. Pulmonary emphysema.....																								
													1	1	1	12	98. Other diseases of the respiratory system (tuberculosis excepted).....																								
1		1	1	1	1	1						1	2	3	1	4	99. Diseases of the mouth and annexa.....	3	1																					2	
2		1	1	1	1	1						1	2	3	1	15	100. Diseases of the pharynx.....	1																							4
1		1	1	1	1	1						1	2	3	1	17	101. Diseases of the esophagus.....																								15
1		1	1	1	1	1						1	2	3	1	46	102. Ulcer of the stomach.....																								2
12	16	29	17	15	19	135	167	92	50	24	16	310	271	430	151	581	103. Other diseases of the stomach (cancer excepted).....	1		1																					17
6	6	9	6	6	4	13	12	8	6	5	38	44	51	31	82	104. Diarrhoea and enteritis (under 2 years).....	488	93																							46
																	105. Diarrhoea and enteritis (2 years and over).....		16	11	4	5	1	1	1	1	1	1	4	3	5	2	3	2	8	4	5	5	82		
																	106. Ankylostomiasis.....																								
																	107. Intestinal parasites.....																								
9	4	6	9	4	7	5	13	5	3	5	6	38	38	64	12	76	108. Appendicitis and typhlitis.....		1	1																					76
10	8	4	10	13	8	8	9	3	7	5	42	50	78	14	92	109. Hernias, intestinal obstructions.....																									92
																	110. Diseases of the intestines.....	11	1																						11
																	111. Acute yellow atrophy of the liver.....	2	1																						3
																	112. Hydatid tumor of the liver.....																								
8	3	9	4	10	8	8	7	10	4	5	6	55	27	71	11	82	113. Cirrhosis of the liver.....																								
1	2			4	1	2	3			1	1	7	12	16	3	19	114. Biliary calculi.....																								
3	5	4	5	2	4	3	3			2	2	15	20	32	3	35	115. Other diseases of the liver.....																								
																	116. Diseases of the spleen.....																								
																	117. Simple peritonitis (nonpuerperal).....																								
1																	118. Other diseases of the digestive system (cancer and tuberculosis excepted).....																								
11	17	13	8	5	8	9	11	8	13	7	9	66	53	73	46	119	119. Acute nephritis.....	4		1	2																				8
105	62	76	74	74	72	68	63	45	78	85	86	463	425	725	163	888	120. Bright's disease.....	2	1																						119
																	121. Chyluria.....																								
																	122. Other diseases of the kidneys and annexa.....	1	2	1																					
																	123. Calculi of the urinary passages.....																								
																	124. Diseases of the bladder.....	1																							
																	125. Diseases of the urethra, urinary abscess, etc.....																								
																	126. Diseases of the prostate.....																								
																	127. Nonvenereal diseases of the male genital organs.....																								
																	128. Uterine hemorrhage (nonpuerperal).....																								
																	129. Uterine tumor (noncancerous).....																								
																	130. Other diseases of the uterus.....																								
																	131. Cysts and other tumors of the ovary.....																								
																	132. Salpingitis and other diseases of the female genital organs.....																								
																	133. Nonpuerperal diseases of the breast (cancer excepted).....																								
																	134. Accidents of pregnancy.....																								
																	135. Puerperal hemorrhage.....																								
																	136. Other accidents of labor.....																								
																	137. Puerperal septichemia.....																								
																	138. Puerperal albuminuria and convulsions.....																								
																	139. Puerperal phlegmasia alba dolens, embolus, sudden death.....																								
																	140. Following childbirth (not otherwise defined).....																								
																	141. Puerperal diseases of the breast.....																								
																	142. Gangrene.....																								
																	143. Furuncle.....																								

TABLE A—CONTINUED

DEATHS IN BALTIMORE CITY, 1916, BY AGE, SEX, COLOR, MONTH AND CAUSE.

January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	White	Colored	Total	Causes of Death	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 and over	Unknown	Total	
1	2	1	1	1	1	1	1	1	1	1	1	7	1	3	7	5	144. Acute abscess	4																					8		
2	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	23	145. Other diseases of the skin and annexa	12	1				6	12	5		1	1			1	1	1	1					12		
3	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	5	146. Diseases of the bones (tuberculosis excepted)	1		1																			5		
4	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	111	147. Diseases of the joints (tuberculosis and rheumatism excepted)	1		1																			111		
5	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	148. Amputations	1																					1			
6	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	149. Other diseases of the organs of locomotion	1																					1			
7	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	150. Congenital malformations (stillbirths not included)	102	5	2	1		1																111			
8	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	151. Congenital debility, tetanus, and sclerema	456																					456			
9	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	152. Other diseases peculiar to early infancy	145																					145			
10	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	153. Lack of cure	3																					3			
11	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	154. Senility	83																					83			
12	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	155. Suicide by poison	25									4	1	5	4	2	1	3	4	1	1	1	1	1	1	1	25
13	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	156. Suicide by asphyxia	13																					13			
14	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	157. Suicide by hanging or strangulation	16																					16			
15	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	158. Suicide by drowning	3																					3			
16	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	159. Suicide by firearms	25									1	3	1	3	2	2	4	6	3	1	1	1	1	1	25	
17	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	160. Suicide by cutting or piercing instruments	3																					3			
18	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	161. Suicide by jumping from high places	4																					4			
19	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	162. Suicide by crushing	1																					1			
20	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	163. Other suicides	3										2											3			
21	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	164. Poisoning by food	1																					1			
22	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	165. Other acute poisonings	3																					3			
23	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	166. Conflagration	2																					2			
24	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	167. Burns (conflagration excepted)	61		3	6	8	8	7	1	3	12	2	3	3	1	1	3	2	3	1	1	1	1	61		
25	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	168. Absorption of deleterious gases (conflagration excepted)	20																					20			
26	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	169. Accidental drowning	7						1	1													7				
27	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	170. Traumatism by firearms	7								5	5	5	7	10	1	4	4	5	2	6	3	1	1	1	7	
28	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	171. Traumatism by cutting or piercing instruments	1																					1			
29	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	172. Traumatism by fall	11																					11			
30	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	173. Traumatism by mines and quarries	3		2	1			1	2	2	1	2	8	6	5	3	5	5	7	8	10	11	11	18		
31	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	174. Traumatism by machines	21																					21			
32	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	175. Traumatism by other crushing (vehicles, railroads, landslides, etc.)	80			1	1	11	10	5	3	9	3	3	3	3	11	8	3	4	3	2		80			
33	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	176. Injuries by animals	6																					6			
34	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	177. Starvation	1																					1			
35	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	178. Excessive cold	12																					12			
36	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	179. Effects of heat	5																					5			
37	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	180. Lightning	26																					26			
38	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	181. Electricity (lightning excepted)	9																					9			
39	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	182. Homicide by firearms	18																					18			
40	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	183. Homicide by cutting or piercing instruments	3																					3			
41	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	184. Homicide by other means	2																					2			
42	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	185. Fractures (cause not specified)	1																					1			
43	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	186. Other external violence	1																					1			
44	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	187. Ill-defined organic disease	2																					2			
45	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	188. Sudden death	2																					2			
46	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1	189. Cause of death not specified or ill-defined	2																					2			
47	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
48	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
49	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
50	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
51	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
52	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
53	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
54	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
55	1	1	1	1	1	1	1	1	1	1	1	12	11	22	1																						15				
56	1	1	1</																																						



DEATHS IN COUNTIES OF MARYLAND, 1916, BY AGE, SEX, COLOR, MONTH AND CAUSE.

*2 Chinese; 1 Japanese; 3 color unknown.



TABLE B—CONTINUED
DEATHS IN COUNTIES OF MARYLAND, 1916, BY AGE, SEX, COLOR, MONTH AND CAUSE.

Cause of Death																																								
January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	White	Colored	Total		0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 and over	Unknown	Total		
1			1							1		1	2	3		3	46. Other tumors (tumors of the female genital organs excepted)														1	1								3
4	6	5	1		1		1		1	1		4	9	15	17	7	47. Acute articular rheumatism							4	4	3	1	1			1	2								24
			2	2										11	9	4	48. Chronic rheumatism and gout													1									13	
														3	2	1	49. Scurvy																						3	
13	6	10	13	4	4			5	10	13	4	38	59	84	13	97	50. Diabetes						1	2	3		3			4	1	7	16	10	7	16	15	5	7	97
														3	3	3	51. Exophthalmic goitre													1									3	
														2	5	1	52. Addison's disease																						6	
3	1	1	1	1	1				3	4		6	8	14	2	16	53. Leucemia						1							1	2								16	
4	1	3	2	5	4		3		2			6	17	21	30	8	38	54. Anemia, chlorosis						2		1	1	1	3	2	4	3	2	3	4	5	2		38	
2		1	1	1				1	1			3	3	6		6	55. Other general diseases																						6	
3	1	2	5	6	4	8		5	5	6	9	61	5	*56	10	66	56. Alcoholism (acute or chronic)						1				2	3	14	4	9	7	7	8	5	3	1	2	1	66
											1	4		4		4	57. Chronic lead poisoning																						4	
																	58. Other chronic occupation poisonings																							
																	59. Other chronic poisonings																							
																	60. Encephalitis																							
																	61. Meningitis																							
																	62. Locomotor ataxia																							
																	63. Other diseases of the spinal cord																							
68	4	62	61	63	51	53	50	44	48	63	66	359	334	564	129	693	64. Cerebral hemorrhage, apoplexy																						693	
1	2	1												6	1	7	65. Softening of the brain																							
25	26	24	31	30	18	32	26	20	20	18	18	136	152	220	68	288	66. Paralysis without specified cause																							
8	3	3	7	7	8	9	4	5	3	9	1	45	15	42	18	60	67. General paralysis of the insane							1																
4	3	2	2		1	1	2	1	3			5	14	18	1	19	68. Other forms of mental alienation																							
9	3	8	4	8	1			5	3	1	2	6	24	26	41	9	50	69. Epilepsy																						
0	10	6	6	6	5	6	4	4	3	5	2	33	30	33	63	4	70. Convulsions (nonfebrile)						1																	
1	1	2			2							3	2	4	1	5	71. Convulsions of infants																							
2	1	1	1	2	5	4	1	1	2		2	10	9	12	7	19	72. Chorea							1	2	1	1													
																	73. Neuralgia and neuritis																							
																	74. Other diseases of the nervous system																							
																	75. Diseases of the eyes and their annexa																							
																	76. Diseases of the ears																							
																	77. Pericarditis																							
																	78. Acute endocarditis																							
																	79. Organic diseases of the heart																							
83	74	80	81	62	74	79	80	86	69	124	123	521	494	769	246	1015	80. Angina pectoris																							
3	7	4	3	6	5	5	3	3	5	9	2	46	15	54	7	61	81. Diseases of the arteries, atherosclerosis, aneurysm, etc.																							
13	12	4	5	10	9	15	14	13	13	11	16	80	55	107	28	135	82. Embolism and thrombosis																							
4	1		3	1		4	6	2	3	2	1	16	11	25	2	27	83. Diseases of the veins (varices, hemorrhoids, phlebitis, etc.)																							
																	84. Diseases of the lymphatic system (lymphangitis, etc.)																							
1		1										2		2		2	85. Hemorrhage; other diseases of the circulatory system																							
																	86. Diseases of the nasal fossae																							
																	87. Diseases of the larynx																							
																	88. Diseases of the thyroid body																							
25	11	16	12	13	1	4	5	6	6	10	21	63	70	90	43	133	89. Acute bronchitis																							
3	7	4	7	6	5	4	4	4	4	3	8	5	30	30	44	16	60	90. Chronic bronchitis																						
74	59	94	77	34	31	9	16	17	30	47	63	277	276	376	177	553	91. Broncho-pneumonia																							
132	92	109	76	33	21	14	7	12	32	32	73	330	295	447	178	625	92. Pneumonia																							
3	2	5	2	5	2	3	3		5		1	13	18	*25	6	31	93. Pleurisy																							

* 1 color unknown.

TABLE B—CONTINUED
DEATHS IN COUNTIES OF MARYLAND, 1916, BY AGE, SEX, COLOR, MONTH AND CAUSE.

[illegible]

* 1 color unknown.

DEATHS IN COUNTIES OF MARYLAND, 1916, BY AGE, SEX, COLOR, MONTH AND CAUSE.

January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	White	Colored	Total	Cause of Death	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 and over	Unknown	Total	
																	140. Following childbirth (not otherwise defined).....																								
																	141. Puerperal diseases of the breast.....																								
3	2	4	5	4	1	4	12	1	4	12	2	18	16	21	13	34	142. Gangrene.....																								
																	143. Furuncle.....																								
3	3	1	1	1	1	1	1	1	1	1	1	6	8	7	2	9	144. Acute abscess.....			1																					
3	2	1	1	1								4	5	8	2	10	145. Other diseases of the skin and annexa.....	4																							
																	146. Diseases of the bones (tuberculosis excepted).....				2				1	2															
																	147. Diseases of the joints (tuberculosis and rheumatism excepted).....																								
																	148. Amputations.....																								
10	7	8	8		2							1	1	2		2	149. Other diseases of the organs of locomotion.....																								
39	48	40	56	40	52	70	65	82	75	65	46	378	300	472	206	676	150. Congenital malformations (stillbirths not included).....	111	2	2				1																	
7	8	6	10	9	6	3	12	14	11	8	8	55	37	69	23	92	151. Congenital debility, icterus, and sclerema.....	91																							
1	1											3	2	4	1	5	152. Other diseases peculiarly to early infancy.....	5																							
17	23	24	16	17	12	17	10	23	28	20	14	95	126	154	67	221	153. Lack of care.....																								
2	1	5	2	1								8	8	14	2	16	154. Senility.....																								
																	155. Suicide by poison.....																								
																	156. Suicide by asphyxia.....																								
																	157. Suicide by hanging or strangulation.....																								
																	158. Suicide by drowning.....																								
																	159. Suicide by firearms.....																								
																	160. Suicide by cutting or piercing instruments.....																								
																	161. Suicide by jumping from high places.....																								
																	162. Suicide by crushing.....																								
																	163. Other suicides.....																								
																	164. Poisoning by food.....																								
																	165. Other acute poisonings.....																								
																	166. Conflagration.....																								
																	167. Burns (conflagration excepted).....																								
																	168. Absorption of deleterious gases (conflagration excepted).....																								
																	169. Accidental drowning.....																								
																	170. Traumatism by firearms.....																								
																	171. Traumatism by cutting or piercing instruments.....																								
																	172. Traumatism by fall.....																								
																	173. Traumatism in mines and quarries.....																								
																	174. Traumatism by machines.....																								
																	175. Traumatism by other crushing (vehicles, railroad, landslides, etc.).....																								
																	176. Injuries by animals.....																								
																	177. Starvation.....																								
																	178. Excessive cold.....																								
																	179. Effects of heat.....																								
																	180. Lightning.....																								
																	181. Electricity (lightning excepted).....																								
																	182. Homicide by firearms.....																								
																	183. Homicide by cutting or piercing instruments.....																								
																	184. Homicide by other means.....																								
																	185. Fractures (cause not specified).....																								
																	186. Other external violence.....																								
																	187. Ill-defined organic disease.....																								
																	188. Sudden death.....																								
																	189. Cause of death not specified or ill-defined.....																								
																	TOTAL.....																								
1239	1068	1131	1020	904	882	1010	1141	1016	978	1025	1048	6651	5821	9007	3465	12472		2302	425	181	111	73	241	216	365	479	434	425	447	462	539	586	661	736	907	906	852	1048	76	12472	

* 1 color unknown

TABLE C
DEATHS IN MARYLAND, 1916, BY CAUSES, SEX, COLOR AND COUNTY.

					Cause of Death	Baltimore	City	Allegany	Anne Arundel	Baltimore	Calvert	Caroline	Carroll	Cecil	Charles	Dorchester	Frederick	Garrett	Harford	Howard	Kent	Montgomery	Pr. George's	Queen Anne's	Somerset	St. Mary's	Talbot	Washington	Wicomico	Worcester	Total Maryland & Balt. City	Percentage			
97	65	98	64	162	1. Typhoid fever	104	14	6	18	6	6		5	5	11	8	5	6	1	12	12	3	8	10	5	12	15	19	5	266	1.18				
					2. Typhus fever																														
3	5	4	4	8	3. Relapsing fever																														
					4. Malaria										1	2	1														1	10	0.04		
34	40	62	12	74	5. Smallpox																														
11	18	25	4	29	6. Measles	32	8	5	11						6	6	6	3	1	1	1	1	4	1			19		1	106	0.47				
47	65	54	58	112	7. Scarlet fever	22	1		16				2				1	2	1													51	0.23		
66	59	118	7	125	8. Whooping cough	63	9	2	11	1			4	1	15		6	2	2	2	2	10	21	12	8	8	12	5	1			175	0.78		
94	117	156	55	211	9. Diphtheria and croup	40	11	1	34		6	2	1	1	4	11	8	4	2	2	2	6	5	2	2	6	14	12	3	165	0.73				
					10. Influenza	128	13	11	36	2	2	4	15	17	13	7	5	11	4	6	7	6	9	4	4	12	14	5	4	339	1.51				
					11. Miliary fever																														
1		1		1	12. Asiatic cholera																														
10	8	13	5	18	13. Cholera nostras							2	1							2		1	1									1	0.004		
					14. Dysentery	7	1	1	1						1							1	1							2	2	25	0.11		
					15. Plague																														
					16. Yellow fever																														
17	9	23	3	26	17. Leprosy																														
2		1	1	2	18. Erysipelas	23	3		7				7	1		1	1																49	0.22	
21	9	27	3	30	19. Other epidemic diseases	3			1																								5	0.02	
					20. Purulent infection and septichæmia	20	2	2	7	1	2	3										2	2	1									50	0.22	
					21. Glanders																														
1	1	2		2	22. Anthrax																														
14	7	10	11	21	23. Rabies							1																					2	0.009	
					24. Tetanus	8	2		1							2	2					1			1	3	1	2	3	2			29	0.13	
					25. Mycoses	1																											1	0.004	
	2	1	1	2	26. Pellagra	1			1							1																	3	0.01	
					27. Beriberi																														
790	715	947	558	1565	28. Tuberculosis of the lungs	862	53	76	495	24	24	33	27	33	68	168	12	35	25	43	39	65	25	46	35	31	52	60	36	2367	10.52				
24	19	20		43	29. Acute military tuberculosis	65	3	5	17		1	3	3									1	2	2									3	0.18	
17	21	24	14	38	30. Tuberculous meningitis	54	4	2	12		2	5	5										2										92	0.41	
13	27	18	22	40	31. Abdominal tuberculosis	38	3	5	8		2					4	3																78	0.35	
7	3	8	2	10	32. Pott's disease	7	1	1	3		1				1	1																	17	0.08	
1	1	2		2	33. White swelling	3																												5	0.02
12	8	14	6	20	34. Tuberculosis of other organs	11	3		4																									12	0.14
5	4	5	4	9	35. Disseminated tuberculosis	9			2	1	1																							1	0.08
13	6	7	12	19	36. Rickets	5	5	1	1							1	1																1	0.11	
61	34	35	60	95	37. Syphilis	92	6	10	51		2	1	2	2	6	3																	187	0.83	
					38. Gonococcus infection	7																												7	0.03
20	7	23	4	27	39. Cancer and other malignant tumors of the buccal cavity	29	1		13								2	2																56	0.25
116	127	223	29	243	40. Cancer and other malignant tumors of the stomach, liver	213	25	8	63		6	14	6	1	5	19	9	12	4	3	9	9	6	9	4	6	18	2	5	456	2.03				
29	25	50	4	54	41. Cancer and other malignant tumors of the peritoneum, rectum, intestines	64	3	1	15	2	2	5	1	1	2	4	1	1	1	1	1	1	1	1			2	2	5	1	1	118	0.52		
	92	72	20	92	42. Cancer and other malignant tumors of the female genital organs	99	11	1	32		1	7	2	1	4	6				2	1												1	0.55	
1	71	65	7	72	43. Cancer and other malignant tumors of the breast	70	5	4	16	2			5			2	2	4	1	4	3												142	0.63	
20	9	28	1	29	44. Cancer and other malignant tumors of the skin	11	3		9		1			3	1	2	2	2															40	0.18	

* 2 color unknown; 2 Chinese; 1 Japanese.



TABLE C-C-CONTINUED
DEATHS IN MARYLAND, 1916, BY CAUSES, SEX, COLOR AND COUNTY.

Male	Female	White	Colored	Total Rural District	Cause of Death	Baltimore City	Allegheny	Anne Arundel	Baltimore	Calvert	Caroline	Carroll	Cecil	Charles	Dorchester	Frederick	Garrett	Harford	Howard	Kent	Montgomery	Pr. George's	Queen Anne's	Somerset	St. Mary's	Talbot	Washington	Wicomico	Worcester	Total Maryland & Balt. City	Percentage		
58	28	*79	7	86	45. Cancer and other malignant tumors of other organs and of organs not specified.....	107	7	3	31	1	1	7	3	1	2	2	2	3	1	2	2	4	3	1	1	4	3	2	193	0.86			
1	2	3	3	3	46. Other tumors (tumors of the female genital organs excepted).....	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	0.03			
9	15	17	7	24	47. Acute articular rheumatism.....	24	2	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	48	0.21			
2	11	9	4	13	48. Chronic rheumatism and gout.....	10	2	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	0.10			
38	59	84	13	97	49. Scurvy.....	119	8	2	31	1	1	4	4	1	11	4	2	1	1	1	1	1	1	1	1	1	1	1	4	0.02			
4	2	5	1	6	50. Diabetes.....	7	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	216	0.96			
8	8	14	2	16	51. Exophthalmic goitre.....	19	3	3	3	1	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	10	0.04			
17	21	30	8	38	52. Addison's disease.....	23	4	2	7	2	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	0.03			
3	3	6	1	6	53. Leucemia.....	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	35	0.16			
61	5	*56	10	66	54. Anemia, chlorosis.....	28	13	5	29	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	61	0.27			
4	4	4	4	4	55. Other general diseases.....	12	13	5	29	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	0.04			
1	1	1	1	1	56. Alcoholism (acute or chronic).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	94	0.42			
2	3	2	5	5	57. Chronic lead poisoning.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	0.03			
30	27	39	18	57	58. Other chronic occupation poisonings.....	49	7	1	10	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.004			
9	2	8	3	11	59. Other chronic poisonings.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.01			
41	39	67	13	80	60. Encephalitis.....	82	5	6	23	1	3	2	1	5	4	9	2	2	2	2	2	1	1	1	1	1	1	1	13	0.06			
359	334	564	129	693	61. Meningitis.....	680	41	60	139	7	12	43	30	11	17	48	9	17	11	16	40	35	16	15	14	33	48	14	17	1373	6.10		
3	4	6	1	7	62. Locomotor ataxia.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	0.05		
136	152	220	68	288	63. Other diseases of the spinal cord.....	36	13	5	57	2	8	10	10	9	16	32	5	18	10	5	4	9	9	13	6	10	16	10	11	324	1.44		
45	15	42	18	60	64. Cerebral hemorrhage, apoplexy.....	14	3	8	29	1	12	12	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	74	0.33			
5	14	18	1	19	65. Softening of the brain.....	22	1	1	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21	0.09			
24	26	41	9	50	66. Paralysis without specified cause.....	12	5	2	14	1	12	12	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	62	0.28			
4	3	1	4	7	67. General paralysis of the insane.....	30	3	11	11	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	0.02			
33	30	30	33	63	68. Other forms of mental alienation.....	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	93	0.41			
3	2	4	1	5	69. Epilepsy.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	0.02			
10	9	12	7	19	70. Convulsions (nonpuerperal).....	39	1	2	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	0.02			
16	7	12	5	17	71. Convulsions of infants.....	15	2	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	32	0.14			
6	5	10	1	11	72. Chorea.....	6	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	0.08			
15	14	24	5	29	73. Neuralgia and neuritis.....	81	3	2	7	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	110	0.49			
521	494	769	246	1015	74. Other diseases of the nervous system.....	998	65	58	229	9	29	64	30	7	37	68	19	38	21	22	48	55	30	17	14	21	86	32	16	2013	8.94		
46	15	54	7	61	75. Diseases of the eyes and their annexa.....	66	2	1	6	1	4	2	1	8	4	2	1	1	1	1	1	1	1	1	1	1	1	1	4	3	1	127	0.56
80	55	107	28	135	76. Diseases of the ears.....	166	11	7	40	1	8	5	2	6	4	2	5	5	2	4	4	4	3	1	2	20	2	1	301	1.34			
16	11	25	2	27	77. Pericarditis.....	24	4	3	3	2	2	2	1	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	51	0.23			
5	4	1	5	5	78. Acute endocarditis.....	6	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.05			
2	2	2	2	2	79. Organic diseases of the heart.....	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	0.04			
1	1	1	1	1	80. Angina pectoris.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	0.02			
7	4	9	2	11	81. Diseases of the arteries, atheroma, aneurysm, etc.....	6	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.004		
1	1	1	1	1	82. Embolism and thrombosis.....	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	0.08		
63	70	90	43	133	83. Diseases of the veins (varices, hemorrhoids, phlebitis, etc.).....	81	18	12	36	1	3	11	2	1	3	4	2	2	2	4	3	4	1	2	7	1	10	3	2	214	0.95		
30	30	44	16	60	84. Diseases of the lymphatic system (lymphangitis, etc.).....	42	9	4	18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	102	0.45		
277	276	376	177	553	85. Hemorrhage; other diseases of the circulatory system.....	576	37	41	154	2	11	30	11	18	25	38	9	16	7	15	32	22	6	18	12	6	20	12	11	1129	5.02		
1	1	1	1	1	86. Diseases of the nasal fossae.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	0.02			
7	4	9	2	11	87. Diseases of the larynx.....	6	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.004		
1	1	1	1	1	88. Diseases of the thyroid body.....	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	0.08		
63	70	90	43	133	89. Acute bronchitis.....	81	18	12	36	1	3	11	2	1	3	4	2	2	2	4	3	4	1	2	7	1	10	3	2	214	0.95		
30	30	44	16	60	90. Chronic bronchitis.....	42	9	4	18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	102	0.45		
277	276	376	177	553	91. Broncho-pneumonia.....	576	37	41	154	2	11	30	11	18	25	38	9	16	7	15	32	22	6	18	12	6	20	12	11	1129	5.02		

* 1 color unknown

* 1 color unknown.



TABLE C—CONTINUED

DEATHS IN MARYLAND, 1916, BY CAUSES, SEX, COLOR AND COUNTY.

					Cause of Death	Baltimore City	Allegany	Anne Arundel	Baltimore	Calvert	Caroline	Carroll	Cecil	Charles	Dorchester	Frederick	Garrett	Harford	Howard	Keok	Montgomery	Pr. George's	Queen Anne's	Somerset	St. Mary's	Talbot	Washington	Wicomico	Worcester	Total Maryland & Balto. City	Percentage		
330	295	447	178	625	92. Pneumonia	765	47	58	135	10	13	82	20	14	17	28	11	19	18	13	21	41	14	13	13	17	34	20	17	1390	6.18		
12	18	25	6	31	93. Pleurisy	10	4	1	8	1	7	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	41	0.18		
25	19	36	8	44	94. Pulmonary congestion, pulmonary apoplexy	9	3	1	11	1	5	1	1	1	3	1	1	1	1	2	2	1	1	1	1	1	1	1	1	53	0.24		
3	3	2	1	3	95. Gangrene of the lung	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.01		
13	10	17	6	23	96. Asthma	9	2	2	3	2	2	1	1	1	1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	32	0.14		
4	4	3	1	4	97. Pulmonary emphysema	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	0.03		
12	8	14	6	20	98. Other diseases of the respiratory system (tuberculosis excepted)	2	4	1	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	0.10		
4	8	3	9	12	99. Diseases of the mouth and annexa	4	1	1	1	1	1	1	1	1	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	0.07		
9	14	19	4	23	100. Diseases of the pharynx	15	1	1	3	4	1	3	1	1	1	4	1	1	2	1	1	2	1	2	1	1	1	1	1	38	0.17		
1	1	1	1	2	101. Diseases of the esophagus	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	0.02	
12	9	18	3	21	102. Ulcer of the stomach	17	3	9	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	38	0.17		
43	35	63	15	78	103. Other diseases of the stomach (cancer excepted)	46	2	2	17	2	2	4	2	1	4	5	7	1	3	2	8	2	3	2	3	3	3	3	6	124	0.55		
372	325	482	215	697	104. Diarrhea and enteritis (under 2 years)	581	53	67	115	8	28	19	18	17	53	12	9	24	14	20	19	39	19	28	20	18	51	20	26	1278	5.68		
71	82	124	29	153	105. Diarrhea and enteritis (2 years and over)	82	17	9	25	1	2	7	3	5	10	2	5	6	4	2	2	7	7	10	2	6	3	9	9	4	235	1.04	
4	2	2	4	10	106. Ankylostomiasis	82	17	9	25	1	2	7	3	5	10	2	5	6	4	2	2	7	7	10	2	6	3	9	9	4	235	1.04	
27	16	34	9	43	107. Intestinal parasites	76	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	0.02		
41	38	54	25	79	108. Appendicitis and typhilitis	76	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	119	0.53		
7	6	5	13	21	109. Hernias, intestinal obstructions	92	11	3	16	2	6	1	1	1	1	3	9	2	2	1	5	1	4	2	2	2	2	3	3	1	171	0.76	
2	1	2	1	3	110. Diseases of the intestines	11	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	24	0.11		
50	22	59	13	72	111. Acute yellow atrophy of the liver	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	0.03	
7	18	23	2	25	112. Hydatid tumor of the liver	82	8	6	23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	154	0.68		
14	25	36	3	39	113. Cirrhosis of the liver	19	3	4	4	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	44	0.20	
3	7	9	1	10	114. Biliary calculi	35	10	2	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	74	0.33		
3	1	4	1	8	115. Other diseases of the liver	6	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	0.07		
81	71	98	54	152	116. Diseases of the spleen	119	7	29	31	1	1	3	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	12	0.05		
501	394	681	214	895	117. Simple peritonitis (nonpuerperal)	888	68	67	172	9	23	52	29	19	49	62	9	36	17	24	26	25	13	35	18	26	49	45	22	1783	7.92		
8	2	8	2	10	118. Other diseases of the digestive system (cancer and tuberculosis excepted)	17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	0.12		
2	1	2	3	6	119. Acute nephritis	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	0.02		
3	3	5	1	6	120. Bright's disease	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	0.06		
2	1	1	1	3	121. Chyluria	30	4	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	0.04		
18	16	2	18	36	122. Other diseases of the kidneys and annexa	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	48	0.21		
1	1	1	1	4	123. Calculi of the urinary passages	30	4	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	5	5	5	20	124. Diseases of the bladder	25	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30	0.13	
9	9	9	9	36	125. Diseases of the urethra, urinary abscess, etc.	10	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19	0.08		
1	1	1	1	4	126. Diseases of the prostate	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	0.04	
1	1	1	1	4	127. Nonpuerperal diseases of the female genital organs	16	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	4	128. Uterine hemorrhage (nonpuerperal)	25	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30	0.13	
5	5	5	5	20	129. Uterine tumor (noncancerous)	10	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19	0.08	
9	9	9	9	36	130. Other diseases of the uterus	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	0.04	
1	1	1	1	4	131. Cysts and other tumors of the ovary	16	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	4	132. Salpingitis and other diseases of the female genital organs	16	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26	0.12	
15	13	2	15	30	133. Nonpuerperal diseases of the breast (cancer excepted)	16	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	11	7	18	36	134. Accidents of pregnancy	12	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31	0.14	
4	4	4	4	16	135. Puerperal hemorrhage	12	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30	0.13	
4	4	4	4	16	136. Other accidents of labor	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	0.05	
40	26	14	40	80	137. Puerperal septicemia	35	5	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	75	0.33	
28	14	14	28	56	138. Puerperal albuminuria and convulsions	28	4	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	56	0.25	
5	5	5	5	20	139. Puerperal phlegmasia alba dolens, embolus sudden death	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	0.04	

* 1 color unknown.



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TABLE C—CONCLUDED
DEATHS IN MARYLAND, 1916, BY CAUSES, SEX, COLOR AND COUNTY.

Cause of Death						Baltimore City	Allegany	Anne Arundel	Baltimore	Calvert	Caroline	Carroll	Cecil	Charles	Dorchester	Frederick	Garrett	Harford	Howard	Kent	Montgomery	Pr. George's	Queen Anne's	Somerset	St. Mary's	Talbot	Washington	Wicomico	Worcester	Total Maryland & Balto. City	Percentage
Male	Female	White	Colored	Total	Rural District																										
						140.																									
						141.																									
18	16	21	13	34		142.																									
4	3	1	4	8		143.																									
5	3	7	2	12		144.																									
6	4	7	2	15		145.																									
4	4	6	2	16		146.																									
2	2			4		147.																									
						148.																									
1	1			2		149.																									
64	52	87	29	116		150.																									
						151.																									
378	300	472	206	678		152.																									
55	37	69	23	92		153.																									
3	2	4	1	5		154.																									
95	126	154	67	221		155.																									
8	8	14	2	16		156.																									
2	1	3		3		157.																									
11	5	16		16		158.																									
1	4	5		5		159.																									
41	3	41	3	44		160.																									
6	6			6		161.																									
1	1			1		162.																									
2	1	3		3		163.																									
4	1	2	3	5		164.																									
8	5	13		13		165.																									
12	6	11	7	18		166.																									
31	37	39	29	66		167.																									
9	7	7	9	16		168.																									
						169.																									
91	4	62	33	95		170.																									
36	1	23	14	37		171.																									
						172.																									
59	32	80	11	91		173.																									
33	33	32	1	33		174.																									
6	1	7		7		175.																									
167	21	163	25	188		176.																									
						177.																									
5	2	6	1	7		178.																									
1	1	1		2		179.																									
3	2	3	2	5		180.																									
3	1	4		4		181.																									
4	1	1	4	5		182.																									
2		2		2		183.																									
17	6	9	14	23		184.																									
6	1	4	3	7		185.																									
8	2	8	2	10		186.																									
23	5	15	13	28		187.																									
1	1			1		188.																									
28	26	34	26	54		189.																									
+173	140	1128	185	313		190.																									
6651	5821	9007	3465	12472		TOTAL.																									

* 1 sex unknown; 1 color unknown.

+ 2 sex unknown; 1 color unknown.



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TABLE D

DEATHS IN MARYLAND, 1916, BY COUNTIES, MONTHS, SEX, COLOR AND AGES.

	January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	White	Colored	Total	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 and over	Unknown
Allegany	100	73	75	95	73	60	84	97	87	71	72	79	541	425	924	42	966	207	68	28	15	21	36	39	31	28	46	52	44	45	60	53	65	49	78	1
Anne Arundel	86	70	71	72	47	60	75	89	57	59	48	60	443	351	380	414	794	174	46	15	23	30	34	41	28	23	36	32	40	45	45	43	48	40	47	4
Baltimore (*2 Chinese, 1 Japanese, 2 color unk.)	273	236	265	220	217	222	205	249	230	234	237	216	1586	1218	*2319	*485	2804	355	135	45	32	69	116	111	121	143	145	173	188	187	199	226	206	162	172	19
Calvert	20	9	14	9	10	14	16	13	6	17	12	13	76	77	66	87	153	37	10	2	3	7	9	4	7	5	6	2	8	5	7	7	12	10	10	2
Caroline	36	18	25	19	20	18	18	27	13	37	24	26	155	126	180	101	281	68	30	5	6	2	6	5	3	11	11	11	7	12	16	18	22	15	30	3
Carroll	56	45	44	45	30	34	30	61	38	32	54	56	277	248	484	41	525	60	25	4	7	11	12	14	15	13	19	35	17	32	30	42	67	54	68	0
Cecil	31	28	38	32	36	25	20	27	26	25	33	167	179	273	73	346	62	10	2	6	8	7	14	11	10	9	6	12	19	27	26	32	36	46	3	
Charles	28	28	23	19	16	25	29	23	28	20	29	29	148	149	97	200	257	85	29	8	6	15	20	9	8	5	5	12	10	4	13	12	16	18	21	1
Dorchester	58	47	34	36	40	41	43	46	50	52	47	40	268	266	296	238	534	133	37	11	12	20	26	14	10	15	14	18	33	31	26	35	34	32	29	4
Frederick	72	56	73	66	68	67	66	70	71	61	66	77	427	386	698	115	813	103	36	19	11	36	32	30	37	31	27	28	29	47	53	74	59	76	84	1
Garrett	15	33	13	19	16	17	21	15	28	25	27	22	132	119	248	3	251	44	30	10	4	7	8	10	8	11	8	11	9	11	12	19	10	15	22	2
Harford (*1 color unknown).....	50	36	39	36	19	28	22	29	42	29	24	44	208	190	*296	102	398	61	24	3	4	6	9	11	12	16	13	16	16	26	22	40	32	28	52	7
Howard	31	21	25	19	10	14	18	21	15	19	15	18	122	104	140	86	226	48	16	5	2	6	11	6	5	9	7	6	6	6	10	18	23	22	20	0
Kent	26	22	30	21	26	25	21	29	23	17	24	16	152	128	138	142	280	62	17	6	7	12	11	6	5	10	5	9	8	19	19	22	15	22	22	3
Montgomery	36	46	42	28	32	24	26	44	32	35	34	45	198	226	280	144	424	92	37	6	4	9	8	8	11	18	10	15	20	16	19	37	27	35	51	1
Prince George's (*1 sex unk., 1 color unk.)....	46	43	43	47	55	45	55	47	41	36	46	49	*269	284	*312	241	553	114	48	11	12	17	23	13	24	14	18	17	18	25	30	40	38	41	45	5
Queen Anne's	23	23	20	22	14	17	21	38	26	24	22	20	141	129	148	122	270	52	20	15	4	4	8	7	7	8	9	5	6	18	16	19	18	26	24	4
Somerset	36	33	40	37	30	20	41	24	35	38	34	24	220	172	200	192	392	108	24	3	10	14	11	13	15	9	16	14	15	21	21	24	23	14	33	4
St. Mary's	25	31	34	22	12	20	31	22	21	16	21	18	136	137	135	138	273	62	27	5	9	10	9	7	19	10	9	11	12	8	9	13	19	14	27	2
Talbot	35	37	35	32	27	17	22	33	33	24	31	23	181	168	194	155	349	53	22	3	11	10	19	17	14	16	9	8	16	21	19	25	20	26	37	3
Washington (*1 sex unk., 1 color unk.).....	87	76	73	64	51	43	56	61	64	46	84	74	*407	372	*720	59	779	157	56	16	14	19	20	29	22	21	22	31	34	30	43	63	61	75	64	2
Wicomico	43	42	38	36	32	28	43	41	30	39	33	40	228	217	294	151	445	86	18	10	10	26	29	16	17	12	11	15	21	16	26	31	37	25	36	3
Worcester (*1 sex unk., 1 color unk.).....	26	15	37	24	23	18	47	35	20	22	26	26	*169	150	*185	134	319	79	25	9	4	6	15	10	4	9	7	12	17	17	14	20	22	17	30	2
Total Rural Maryland.....	1239	1068	1131	1020	904	882	1010	1141	1016	978	1035	1048	6651	5821	9007	3465	12472	2302	790	241	216	365	479	434	425	447	462	539	586	661	736	907	906	852	1048	76
Baltimore City (*1 Indian, 3 Chinese).....	1021	859	1033	938	802	699	800	847	696	768	736	836	5186	4852	7568	*2470	10038	1772	648	190	115	229	342	394	418	462	561	614	643	646	663	640	625	517	559	0
Total Maryland	2263	1927	2164	1958	1706	1581	1810	1988	1712	1746	1771	1884	11837	10673	16575	5935	22510	4074	1438	431	331	594	821	828	843	909	1023	1153	1229	1307	1399	1547	1531	1369	1607	76



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BIRTHS IN MARYLAND, 1906, BY MONTHS, SEX, COLOR, NATIVITY, AND AGE OF PARENTS

	MONTH OF BIRTH													PARENTS' NATIVITY						PARENTS' AGE																						
														Native			Foreign			Age of Father													Age of Mother									
	January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	White	Colored	Total	Both Maryland	One Maryland	Neither Maryland	Both Foreign	Either Foreign	Neither Foreign	Both Birthplaces unknown	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 and over	Unknown	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 and over	Unknown	Mothers under 15
Allegany (*1 sex unknown)	139	146	158	160	143	141	142	151	162	158	137	150	808	879	1,749	38	1,787	825	357	278	101	20	5	1	13	322	457	401	278	181	81	37	17	173	500	425	361	220	90	12	5	1 (14)
Anne Arundel (*4 sex unknown; 11 color unknown)	87	101	108	92	94	81	109	95	83	106	92	84	563	569	1,132	387	1,519	738	158	53	165	13	4	1	13	206	303	208	197	104	53	27	18	106	359	236	224	132	34	3	10	1 (13), 4 (14)
Baltimore (*2 sex unknown)	237	244	270	253	250	261	284	299	290	286	247	256	1,591	1,536	3,127	2,870	3,127	2,091	577	193	241	12	12	1	26	529	815	698	517	311	141	69	21	285	851	795	799	427	166	14	8	2 (14)
Calvert (*1 color unknown)	16	23	27	19	35	32	32	23	32	27	19	21	154	152	306	158	306	294	11	0	0	0	0	0	5	64	77	55	40	26	24	13	2	52	80	61	45	45	15	0	0	0
Caroline	40	33	32	44	33	38	30	46	37	46	28	43	238	212	309	111	450	308	101	30	10	1	0	0	10	73	98	103	78	17	23	11	7	50	111	127	79	60	18	0	0	1 (13)
Carroll	50	46	50	57	69	41	62	70	72	71	53	59	357	343	650	59	700	580	95	20	5	0	0	0	13	135	187	146	101	72	27	10	9	77	198	178	137	69	41	2	1	1 (14)
Cecil	37	51	50	40	44	34	32	48	45	45	35	34	243	247	447	48	495	294	135	45	49	2	0	0	4	70	119	99	86	51	33	15	9	53	126	122	95	73	25	0	1	0
Charles	52	50	10	10	17	54	50	46	60	44	44	31	271	287	240	418	578	493	43	17	4	0	1	0	12	102	101	110	83	77	39	27	7	80	144	133	93	78	33	3	1	1 (14)
Dorchester (*1 sex unknown)	79	65	61	65	87	74	68	83	61	71	64	66	425	419	552	292	844	733	58	14	5	2	1	1	24	185	183	150	100	90	51	38	14	129	241	184	140	103	49	4	2	2 (14)
Frederick (*2 sex unknown; 11 color unknown)	118	121	106	85	113	105	112	110	106	123	107	125	697	634	1,104	137	1,331	1,053	201	68	4	1	1	0	26	275	324	247	201	132	63	39	24	170	375	313	208	162	75	12	7	3 (14)
Garrett	40	48	49	56	48	45	47	44	46	52	44	35	284	270	554	0	554	304	157	69	18	5	1	0	4	83	119	113	102	70	34	24	5	53	150	123	106	79	35	6	2	0
Harford (*2 sex unknown)	42	64	53	33	37	14	32	63	49	40	37	43	283	274	410	118	537	396	89	36	13	2	0	1	7	83	130	107	81	64	28	18	9	54	145	135	95	78	22	4	3	1 (13)
Howard	28	26	27	34	38	20	30	33	38	26	20	18	188	170	272	95	367	286	58	17	3	0	1	2	8	69	97	73	49	34	22	10	5	48	107	75	67	44	20	2	4	0
Kent	25	30	39	32	30	41	30	37	39	32	28	33	193	203	224	172	396	335	52	6	1	2	0	0	16	88	87	79	50	44	19	15	3	63	118	80	65	48	20	0	0	2 (14)
Montgomery (*2 sex unknown)	60	64	62	67	72	62	63	85	55	66	50	59	402	363	513	252	765	512	145	87	8	4	1	0	10	130	200	142	123	66	41	27	10	89	211	199	141	92	34	3	3	3 (14)
Prince George's	94	81	93	65	78	84	79	97	85	85	71	67	485	494	628	351	979	580	189	164	25	12	9	0	11	156	221	207	165	119	52	38	10	103	252	234	205	118	54	10	3	0
Queen Anne's	41	32	42	40	32	39	35	46	37	27	35	28	225	209	284	150	434	365	47	16	4	1	1	0	11	92	93	77	75	50	16	16	4	70	119	103	62	54	22	1	0	3 (14)
Somerset (*1 color unknown)	66	71	59	55	58	53	57	63	52	60	52	46	387	305	425	267	692	577	86	25	2	1	0	1	21	170	146	115	112	73	33	14	8	113	221	128	112	90	25	3	0	0
St. Mary's	37	41	43	42	40	41	36	43	48	48	32	35	248	240	270	218	488	446	30	1	0	2	0	0	7	78	102	76	94	71	31	21	8	60	120	110	78	88	26	2	3	1 (13)
Talbot (*2 sex unknown)	34	37	54	47	35	35	29	27	38	27	36	30	228	207	269	168	435	350	63	18	1	0	2	1	10	82	97	68	78	46	23	13	18	53	121	119	67	54	19	1	4	1 (13), 1 (14)
Washington (*1 sex unknown)	111	120	121	123	123	102	145	138	123	144	128	142	789	720	1,477	32	1,509	826	423	221	31	5	3	0	30	300	421	263	239	129	54	25	18	174	447	359	270	179	60	10	1	0
Wicomico (*1 Indian)	61	56	47	46	58	67	60	73	38	63	54	61	353	351	487	217	704	519	144	33	5	1	0	2	19	125	177	146	100	60	34	27	16	95	197	174	117	82	29	3	4	3 (14)
Worcester (*1 sex unknown)	43	33	60	42	51	39	50	38	45	34	40	30	263	262	315	210	525	374	110	40	0	1	0	0	7	113	112	88	80	71	32	10	6	80	141	112	86	69	33	0	3	1 (14)
Total Counties	1,537	1,583	1,631	1,537	1,615	1,542	1,614	1,780	1,661	1,650	1,433	1,512	8,775	8,340	15,041	4,074	19,115	13,279	3,539	1,472	674	94	45	12	309	3,134	4,672	3,810	3,030	1,988	954	571	248	2,276	5,310	4,528	3,426	2,411	931	101	67	27 (14), 5 (13)
Baltimore City (*1 Indian, 3 Chinese, 1 Japanese)	1,250	1,130	1,273	1,062	1,174	1,123	1,201	1,393	1,272	1,157	1,203	1,319	7,472	7,988	12,294	2,268	14,560	7,512	2,921	999	2,030	119	77	2	207	2,943	4,142	3,100	2,107	1,177	493	209	182	1,397	5,166	3,787	2,529	1,512	499	43	33	3 (13), 11 (14)
Maryland	2,787	2,713	2,904	2,599	2,789	2,665	2,808	3,083	2,933	2,807	2,636	2,831	17,247	16,328	27,335	6,340	33,675	20,791	6,189	2,451	3,604	213	122	14	516	6,487	8,514	6,910	5,146	3,165	1,447	760	439	3,873	9,856	8,315	7,055	5,053	1,439	144	100	46



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REPORTED CASES OF NOTIFIABLE DISEASES—RURAL MARYLAND—BY COUNTIES AND DISEASES—1916.

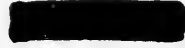
	Typhoid Fever		Malaria	Smallpox	Measles	Scarlet Fever	Whooping Cough	Diphtheria	Influenza	Tuberculosis	Erysipelas	Chickenpox	Mumps	German Measles	Meningitis	Epidemic Meningitis	Cerebro Spinal Membr.	Tubercular Meningitis	Poliomyelitis	Septic Sore Throat	Ophthalmia Neonatorum	Pellagra	Impetigo Contagiosa	Purulent Conjunctivitis	Typhus Fever	Tetanus	Dysentery	Septicemia	Trauma	Rabies	Total
Allegany	172	2	0	1,600	53	210	196	90	149	19	265	35	12	0	0	3	4	8	1	0	0	0	0	0	0	1	2	1	0	2,815	
Anne Arundel	62	3	0	430	62	25	14	16	72	4	61	13	12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	797	
Baltimore	205	3	0	1,811	233	349	165	165	244	26	319	131	17	2	0	3	4	38	20	2	2	0	0	0	0	0	0	4	0	3,734	
Calvert	48	5	0	17	9	0	0	4	20	0	9	4	7	0	0	1	6	0	2	0	0	0	0	0	0	0	0	0	0	194	
Caroline	87	37	0	31	18	1	91	2	26	0	1	9	0	0	0	12	3	4	0	0	0	0	0	0	0	0	0	0	1	313	
Carroll	32	0	0	530	63	106	52	63	36	21	34	24	11	1	0	0	0	5	12	1	0	0	0	1	0	0	1	0	0	990	
Cecil	38	0	0	437	27	10	18	26	24	0	15	2	6	0	0	0	0	3	1	0	0	0	0	0	0	1	2	0	0	610	
Charles	84	18	0	115	6	81	22	41	32	1	7	3	12	0	0	12	0	2	0	0	1	0	0	0	0	0	0	0	0	417	
Dorchester	159	3	1	107	9	7	33	34	52	5	17	12	0	0	0	0	0	3	1	2	0	0	0	0	0	12	1	0	0	438	
Frederick	98	3	0	899	129	118	57	69	63	9	38	27	3	0	1	12	1	4	1	1	0	0	0	0	0	1	1	0	0	1,525	
Garrett	44	0	0	68	19	7	31	43	6	2	4	11	0	0	0	12	0	29	0	0	0	0	0	0	0	2	0	0	0	268	
Harford	39	0	0	416	22	32	35	77	19	1	31	12	12	0	2	0	0	1	1	1	0	0	0	0	0	4	0	0	0	695	
Howard	22	1	0	203	38	115	11	76	35	6	49	16	1	0	0	0	0	5	7	2	0	0	0	0	0	1	0	0	0	588	
Kent	45	0	1	113	1	3	15	18	26	1	26	0	25	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	273	
Montgomery	43	2	0	498	48	139	25	79	58	7	48	11	30	1	0	0	0	5	4	1	0	0	0	0	0	0	0	0	0	985	
Prince George's	102	10	0	334	78	207	46	63	71	6	68	19	10	0	0	1	0	4	0	1	1	1	2	0	1	2	0	0	0	1,027	
Queen Anne's	63	5	0	90	7	22	40	44	25	1	15	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	316	
St. Mary's	15	2	0	6	27	4	6	26	4	2	3	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	97	
Somerset	170	15	0	92	61	119	12	52	44	5	23	91	1	0	0	1	0	0	2	0	0	0	0	1	0	0	0	0	0	1	690
Talbot	40	1	0	91	7	6	37	101	28	1	17	0	2	1	2	1	1	4	0	0	0	0	0	0	0	1	0	0	0	341	
Washington	134	1	34	1,315	97	28	208	29	102	6	168	12	9	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	2,089	
Wicomico	106	9	32	15	7	3	34	9	45	3	18	17	1	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	302	
Worcester	55	0	1	45	1	1	8	12	24	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	160	
Total	1,863	120	69	9,263	1,001	1,684	1,154	1,110	1,228	130	1,164	457	142	8	8	21	26	147	21	11	2	1	2	1	1	21	15	1	2	19,673	

UNIV OF MD COLLEGE PARK



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